

**UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF NEW YORK**

PRUDENT FOREX FUND I LLC and PRUDENT  
CAPITAL MANAGEMENT, LLC, on behalf of  
themselves and all others similarly situated,

Plaintiffs,

- against -

BARCLAYS BANK PLC, BARCLAYS CAPITAL  
INC., BNP PARIBAS GROUP, BNP PARIBAS  
NORTH AMERICA INC., CITIBANK, N.A.,  
CITIGROUP, INC., CREDIT SUISSE GROUP AG,  
CREDIT SUISSE SECURITIES (USA) LLC,  
DEUTSCHE BANK AG, GOLDMAN SACHS GROUP  
INC., GOLDMAN, SACHS & CO., HSBC HOLDINGS  
PLC, HSBC BANK PLC, JPMORGAN CHASE  
BANK, NATIONAL ASSOCIATION, JPMORGAN  
CHASE & CO., LLOYDS BANKING GROUP PLC,  
MORGAN STANLEY, ROYAL BANK OF  
SCOTLAND GROUP PLC, UBS AG, UBS  
SECURITIES LLC, AND JOHN DOE NOS. 1-50,

Defendants.

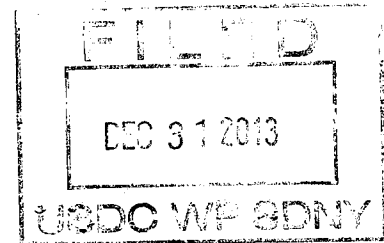
**13 CV 9237**

Docket No.

ECF Case

**CLASS ACTION COMPLAINT**

**JURY TRIAL DEMANDED**



Plaintiffs Prudent FOREX Fund I LLC and Prudent Capital Management, LLC  
("Plaintiffs") complain, upon knowledge as to themselves and their own acts, and upon  
information and belief as to all other matters, against Defendants (defined at ¶¶ 20-32), as  
follows:

**INTRODUCTION**

1. **Nature of the Action.** This action arises from Defendants' unlawful  
combination, agreement and conspiracy to fix and restrain trade in, and the intentional  
manipulation of, the foreign currency exchange ("FX") market through the manipulation of the

WM/Reuters FX rates (“WM/Reuters FX rates”) during the period of at least January 1, 2003 through the present (the “Class Period”), in violation of the Sherman Antitrust Act, 15 U.S.C. §§ 1, 2 *et seq.* and common law.

2. **Background.** WM/Reuters FX rates are published hourly for 159 currencies and half-hourly for the twenty-one most-traded currencies. For the twenty-one most-traded currencies, WM/Reuters FX rates are determined based on the median of all trades in a one minute-long period starting thirty seconds before each half-hour and ending thirty seconds after each half-hour. The most important WM/Reuters FX rates are those computed at 4 p.m. London time (11:00 a.m. New York) each trading day (the “WM/Reuters fix”). Investors throughout the world, including in the United States, use exchange rates from the WM/Reuters fix to price, settle and value trillions in currency-based transactions and financial instruments (“WM/Reuters financial instruments”).

3. Defendants are FX dealers and are responsible for a majority of the world’s FX trading. Together, Defendants dominate the FX market with over 80% of the FX market. In that capacity, Defendants were directly responsible for the setting of the WM/Reuters FX rates during the Class Period, and thereby controlled pricing for WM/Reuters-based financial instruments.

4. **Defendants’ Anticompetitive and Manipulative Conduct.** Defendants intentionally and systematically manipulated the WM/Reuters FX rates to artificial levels for the express purpose of obtaining hundreds of millions (if not billions) in ill-gotten profits on WM/Reuters-based financial instruments held by them or their co-conspirators, the prices of which (and thus profits or losses) were determined based upon exchange rates determined at the WM/Reuters fix. As an intended and direct consequence of Defendants’ unlawful conduct, the prices of the WM/Reuters-based financial instruments were manipulated to artificial and anticompetitive levels by Defendants throughout the Class Period.

5. During the Class Period, Defendants intentionally rigged and manipulated the WM/Reuters FX rates for numerous currencies through diverse and interrelated means including: (i) coordinating their FX trading in instant message chat rooms shamelessly referring to themselves as members of “The Cartel,” “The Bandits’ Club,” “The Dream Team” and “The Mafia”; (ii) executing their own FX trades before client trades while using their knowledge of pending client trades, an improper practice known as front running; and (iii) concentrating a large number of low-volume trades before and during the one minute trading window at 4 pm London time (11 a.m. N.Y. time) when the WM/Reuters Fix is set, a classic manipulative trading strategy known as “banging the close.”

6. **Pending Government Investigations.** Defendants’ unlawful conduct has led to criminal and civil investigations by the United Kingdom’s Financial Conduct Authority (“FCA”), the Swiss Financial Market Supervisory Authority (“FINMA”), the Swiss Competition Commissions (WEKO), the Hong Kong Monetary Authority, the Monetary Authority of Singapore, the Federal Bureau of Investigation (“FBI”), the U.S. Department of Justice, and the U.S. Commodity Futures Trading Commission. Global regulators requested documents from Defendants, including instant messages between members of “The Bandits Club,” “The Cartel,” “The Dream Team” and “The Mafia” regarding their rigging of benchmark WM/Reuters FX rates.

7. The FBI has made unannounced visits to the homes of Defendants’ traders. For example, the *Wall Street Journal* reported that a Deutsche Bank director and New York-based currency trader, Robert Wallden, was visited at his home by the FBI. The FBI showed up at Wallden’s home revealing chat transcripts where Wallden boasted about manipulating the FX market.

8. In the wake of these investigations, Defendants Goldman Sachs, UBS, RBS, Citigroup, Deutsche Bank and JPMorgan banned their traders from using multibank chat rooms.

9. **Defendants Acknowledge They Are Under Investigation by Numerous Government Authorities.** Defendants Barclays, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan, Lloyds, RBS and UBS, have confirmed in recent public filings with the SEC or in other public statements that they are under investigation and cooperating with regulators' investigation into the manipulation of WM/Reuters FX rates.

10. **Defendants Discipline Their FX Traders.** Amid global investigations into the manipulation of global FX rates, more than a dozen of Defendants' traders have been suspended or placed on leaves of absence. Citigroup placed its head of European spot foreign-exchange trading, Rohan Ramchandani, on leave. JP Morgan also placed its London-based head of spot trading for Group of 10 Currencies, (and former RBS trader) Richard Usher, on leave. And former Barclays and UBS currency trader, Matt Gardiner was placed on leave by his current employer Standard Chartered PLC. UBS also disclosed that it has taken disciplinary action against a number of its employees, including senior currency traders Roger Boehler and Niall O'Riordan, as a result of its own internal investigation. Barclays has placed six traders on leave after it turned over IM chat room transcripts to the FCA, including Chris Ashton and Mark Clark in London, Jack Murray in Tokyo and multiple unnamed traders in New York. RBS also suspended two of its London currency traders, Julian Munson and Paul Nash and turned over communications of a former senior trader to regulators.

11. *Bloomberg* reported that Usher, Ramchandani and Gardiner along with two other FX dealers openly discussed customers' trades each day and agreed on exactly when each would execute their trades to maximize the manipulative effect on the WM/Reuters fix. When they were successful in moving the WM/Reuters fix, they would congratulate each other.

12. **Further Evidentiary Support.** Plaintiffs believe that further evidentiary support for the claims alleged herein will be unearthed after a reasonable opportunity for discovery.

### **JURISDICTION AND VENUE**

13. This action arises under Sections 1 and 2 of the Sherman Antitrust Act, 15 U.S.C. §§ 1 and 2, and common law, respectively.

14. This Court has jurisdiction over this action pursuant to Sections 1 and 2 of the Sherman Antitrust Act, 15 U.S.C. §§ 1 and 2, Sections 4 and 16 of the Clayton Act, 15 U.S.C. §§ 15 and 26(a), and 28 U.S.C. §§ 1331 and 1337, respectively. This Court also has jurisdiction over the state law claims under 28 U.S.C. § 1367 because those claims are so related to the federal claim that they form part of the same case or controversy, and under 28 U.S.C. § 1332 because the amount in controversy for the Class exceeds \$5,000,000 and there are members of the Class who are citizens of a different state than Defendants.

15. Venue is proper in the Southern District of New York, pursuant to, among other statutes, Sections 4, 12 and 16 of the Clayton Act, 15 U.S.C. §§ 15, 22 and 26, and 28 U.S.C. §1391(b), (c) and (d). One or more of the Defendants resided, transacted business, were found, or had agents in the District, and a part of the events or omissions giving rise to the claims occurred in the Southern District of New York.

16. Defendants, directly and indirectly, singly and in concert, made use of the means and instrumentalities of transportation or communication in, or the instrumentalities of, interstate commerce, or of the mails in connection with the unlawful acts and practices and courses of business alleged in this Complaint.

17. Defendants' restraint of trade and manipulation of WM/Reuters FX rates, the WM/Reuters fix and the prices of WM/Reuters-based financial instruments had direct, substantial and reasonably foreseeable effects in the United States and on Plaintiffs and members

of the Class. Defendants, as sophisticated market participants, knew, or had good reason to know, that WM/Reuters FX rates and WM/Reuters fixes are disseminated in the U.S., and are used to benchmark, price and/or settle WM/Reuters-based financial instruments traded in the U.S. Defendants knew, or had good reason to know, that their anticompetitive and manipulative conduct in the fixing of WM/Reuters FX rates, would, and did, have direct, substantial and reasonably foreseeable effects in the United States, including on the prices of WM/Reuters-based financial instruments.

### **PARTIES**

18. Plaintiff Prudent FOREX Fund I LLC, an investment fund based in Bellevue, Washington transacted during the Class Period WM/Reuters-based financial instruments at artificial prices caused by Defendants' unlawful conduct and was harmed thereby. Plaintiff was deprived of transacting in a lawful, non-manipulated FX market, and otherwise has been injured in its business or property as a result of Defendants' manipulative conduct and the violations of law alleged herein.

19. Plaintiff Prudent Capital Management, LLC served at all relevant times as the managing member of Prudent FOREX Fund I LLC.

20. Defendant Barclays Bank PLC, is a United Kingdom public limited company headquartered at 1 Churchill Place, London E14 5H, England. Barclays maintains offices in this District. Defendant Barclays Capital Inc. is a wholly owned subsidiary of Barclays PLC and engages in investment banking, wealth management and investment management services. It has been registered with the CFTC as a Futures Commission Merchant since 1990, an approved Exempt Foreign agent since 1992, and a Commodity Pool Operator and Commodity Trading Advisor since 2009. Defendants Barclays Bank PLC and Barclays Capital Inc. are referred to collectively herein as "Barclays." Barclays maintains an office in this District.

21. Defendant BNP Paribas Group is a French bank and financial services company headquartered in Paris, France. BNP Paribas Group maintains offices in this District at 787 Seventh Avenue, New York, New York 10019. BNP Paribas North America Inc. is a Delaware corporation headquartered at 787 7th Avenue, New York, New York 10019. BNP Paribas North America Inc. provides corporate, investment banking and securities brokerage services and is an affiliate of BNP Paribas (collectively, “BNP Paribas”).

22. Defendant Citigroup, Inc., a global financial services company, is a Delaware corporation headquartered at 399 Park Avenue, New York, New York 10043. Defendant Citibank, N.A. is a federally chartered national banking association headquartered at 399 Park Avenue, New York, New York 10043, and is a wholly owned subsidiary of Defendant Citigroup, Inc. Defendants Citigroup, Inc. and Citibank, N.A are referred to collectively herein as “Citigroup.”

23. Defendant Credit Suisse Group AG is a Swiss company based in Zurich, Switzerland headquartered at Paradeplatz 8, 8070 Zurich, Switzerland. Defendant Credit Suisse Securities (USA) LLC is a Delaware limited liability company headquartered at Eleven Madison Avenue, New York, NY 10010, and is a wholly owned subsidiary of Defendant Credit Suisse Group AG. Defendants Credit Suisse Group AG and Credit Suisse Securities (USA) LLC are referred to collectively herein as “Credit Suisse.”

24. Defendant Deutsche Bank AG (“Deutsche Bank”) is a German financial services company headquartered at Taunusanlage 12, 60325 Frankfurt Am Main, Germany. The New York branch of Deutsche Bank is located in the District at 60 Wall Street, New York, New York 10005.

25. Defendant Goldman Sachs Group Inc. is an international financial company headquartered at 200 West Street, New York, NY 10282. Defendant Goldman, Sachs & Co. is a wholly-owned subsidiary of Goldman Sachs Group, Inc. (collectively, “Goldman Sachs”).

26. Defendant HSBC Holdings plc is a United Kingdom public limited company headquartered in London, England. Defendant HSBC Bank plc is a United Kingdom public limited company headquartered in London, England and a wholly owned subsidiary of HSBC Holdings plc. Defendants HSBC Holdings plc and HSBC Bank plc are referred to collectively herein as “HSBC.” HSBC maintains offices in this District.

27. Defendant JPMorgan Chase & Co. is a Delaware financial holding company headquartered at 270 Park Ave., 38<sup>th</sup> Floor, New York, New York 10017. Defendant JPMorgan Chase Bank, National Association, is federally-chartered national banking association headquartered at 270 Park Ave., 38<sup>th</sup> Floor, New York, New York 10017, and is a wholly-owned subsidiary of Defendant JP Morgan Chase & Co. Defendant JPMorgan Chase & Co. and JPMorgan Chase Bank, National Association, are referred to collectively as “JPMorgan.”

28. Defendant Lloyds Banking Group PLC (“Lloyds”) is a United Kingdom public limited company headquartered in London, England. Lloyds was formed in 2009 through the acquisition of HBOS PLC (“HBOS”) by Lloyds TSB Bank plc (“Lloyds TSB”).

29. Defendant Morgan Stanley is a Delaware corporation headquartered at 1585 Broadway, New York, New York 10036.

30. Defendant The Royal Bank of Scotland Group PLC (“Royal Bank of Scotland” or “RBS”) is a United Kingdom public limited company headquartered in Edinburgh, Scotland. The New York branch of RBS is located at 340 Madison Avenue, New York, NY 10173.

31. Defendant UBS AG is a Swiss banking and financial services company headquartered in Switzerland at Bahnhofstrasse 45, Zurich and Aeschenvorstadt, Basel. UBS



AG operates in over 50 countries, including the United States. UBS has two New York branches located at 1285 Avenue of the Americas, New York, NY 10019, and at 299 Park Avenue, New York, NY 10171. Defendant UBS Securities LLC is a Delaware limited liability company headquartered at 677 Washington Blvd, Stamford, Connecticut 06901, and is a wholly owned subsidiary of UBS AG. Defendants UBS AG and UBS Securities LLC are referred to collectively herein as “UBS.”

32. John Doe Defendants Nos. 1-50 are other entities or persons, including banks, interdealer brokers, cash brokers and other co-conspirators whose identities are currently unknown to Plaintiffs. The John Doe Defendants participated in, furthered, and/or combined, conspired or agreed with others to perform the unlawful acts alleged herein, including the restraint of trade, fixing and manipulation of WM/Reuters FX rates and the prices of WM/Reuters-based financial instruments.

33. Defendants Barclays, BNP Paribas, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan, Morgan Stanley, Lloyds, RBS, UBS and John Doe Defendants Nos. 1-50 (collectively “Defendants”) were and are engaged in FX trades used in the calculation of the WM/Reuters FX rates at all relevant times. For example, Defendants Deutsche Bank (15.2%), Citigroup (14.9%), Barclays (10.2%), UBS (10.1%), HSBC (6.9%), JPMorgan (6.1%), RBS (5.6%), Credit Suisse (3.7%), Morgan Stanley (3.15%), Goldman Sachs (2.75%) and BNP Paribas (2.5%) control more than 80% of the FX market.

34. Defendants are also among the largest currency dealers in the United States. In the spot FX market, the market share of the ten firms reporting the highest trading volumes in the U.S. market increased to 98% in 2013 compared to 91% in 2010. The five largest firms accounted for 80% of turnover, up from 74% in 2010.

**AGENTS AND UNNAMED CO-CONSPIRATORS**

35. Various other entities and individuals, including, but not limited to, securities-dealers subsidiaries and/or affiliates of Defendants participated as co-conspirators and manipulators in the acts complained of and performed acts and made statements that aided and abetted and furthered the unlawful conduct alleged herein. The unnamed co-conspirators, along with the above-named Defendants, performed, participated in, furthered and/or combined, conspired or agreed with others to perform the unlawful acts alleged herein, including the restraint of trade, fixing and manipulation of WM/Reuters FX rates and the prices of WM/Reuters-based financial instruments.

**SUBSTANTIVE ALLEGATIONS**

**I. Background**

**A. The WM/Reuters FX Rates**

36. The WM Company manages, collects and distributes WM/Reuters rates. The WM Company is a subsidiary of Boston-based State Street Corp. and Thomson Reuters.

37. WM/Reuters FX rates were first introduced in 1994 and are the global standard for closing spot FX rates for 159 currencies. WM/Reuters FX rates provide standardized exchange rates allowing fund managers to value holdings and assess performance measured against standard benchmarks without having differences caused by exchange rates.

38. The WM/Reuters FX rates are published hourly for 159 currencies and half-hourly for twenty-one of them. For the twenty-one Trade Currencies—major currencies from the British pound to the South African rand—the benchmarks are the median of all trades in a minute-long period starting 30 seconds before the beginning of each half-hour.

The twenty-one Trade Currencies are:

AUD – Australian Dollar

- CAD – Canadian Dollar
- CHF – Swiss Franc
- CZK – Czech Koruna
- DKK – Danish Krone
- EUR – Euro
- GBP – British Pound Sterling
- HKD – Hong Kong Dollar
- HUF – Hungarian Forint
- ILS – Israeli New Schequel
- JPY – Japanese Yen
- MXN – Mexican Peso
- NOK – Norwegian Krone
- NZD – New Zealand Dollar
- PLN – Polish Zloty
- RON – Romanian Leu
- RUB – Russian Ruble
- SEK – Swedish Krona
- SGD – Singapore Dollar
- TRY – Turkish Lira
- ZAR – South African Rand

39. According to the WM/Reuters Spot & Forward Rates Methodology Guide, the WM/Reuters FX rates for the twenty-one trade currencies is calculated as follows:

Over a one-minute fix period, bid and offer order rates from the order matching systems and actual trades executed are captured every second from 30 seconds before to 30 seconds after the time of the fix. Trades are identified as a bid or offer and a spread is applied to calculate the opposite bid or offer.

Using valid rates over the fix period, the median bid and offer are calculated independently and then the mid rate is calculated from these median bid and offer rates, resulting in a mid trade rate and a mid order rate. A spread is then applied to calculate a new trade rate bid and offer and a new order rate bid and offer. Subject to a minimum number of valid trades being captured over the fix period, these new trade rates are used for the fix; if there are insufficient trade rates, the new order rates are used for the fix.

40. The most important WM/Reuters FX rates are those computed at the 4 p.m. close in London (11 a.m. in New York) each trading day at the WM/Reuters fix. Investors throughout the world, including in the United States, use exchange rates as determined by the WM/Reuters fix to price, settle, and value trillions in FX-based financial instruments, including (i) spot FX transactions; (ii) outright forward transactions; (iii) FX swaps; (iv) currency swaps; (v) currency

options; and (vi) exchange-traded funds, closed-end funds and index funds (collectively, “WM/Reuters-based financial instruments” or “Financial Instruments”).

41. **Spot FX Transactions.** A spot FX transaction involves the exchange of two currencies at a rate agreed upon on the date of the contract for value or delivery (cash settlement) within two business days.

42. **Outright Forward Transactions.** An outright forward transaction involves the exchange of two currencies at a rate agreed upon on the date of the contract for value or delivery (cash settlement) at some time in the future (more than two business days later). This also includes forward foreign exchange agreement transactions, non-deliverable forwards, and other forward contracts for differences.

43. **FX Swaps.** FX swaps involve the actual exchange of two currencies (principal amount only) on a specific date at a rate agreed upon at the time of the conclusion of the contract (the “short leg”), and a reverse exchange of the same two currencies at a date further in the future at a rate (generally different from the rate applied to the short leg) agreed upon at the time of the contract (the “long leg”).

44. **Cross Currency Swaps.** A currency swap is a contract that commits two counterparties to exchange streams of interest payments in different currencies for an agreed-upon period of time and to exchange principal amounts in different currencies at an agreed-upon exchange rate at maturity.

45. **Currency Options.** A currency option is an option contract that gives the right to buy or sell a currency with another currency at a specified exchange rate during a specified period.

46. **Exchange-Traded Funds.** An exchange-traded fund tracks an index, a commodity or basket of assets and trades on an exchange. For example, if an exchange-traded

fund, closed-end fund or index fund owns non-U.S. dollar denominated securities, the fund must fix a price for those securities each trading day. The price of a foreign currency denominated security is its local price (*e.g.*, priced in euros or Swiss francs) adjusted for the exchange rate (*e.g.*, the WM/Reuters FX rate) to obtain the U.S. dollar equivalent price.

47. WM/Reuters FX rates are also used by the Chicago Mercantile Exchange (“CME”). For example, on December 18, 2011, the CME launched cash settled over-the-counter (“OTC”) CME WM/Reuters spot, forward and swap transactions for 26 FX pairs. The CME WM/Reuters transactions are cash settled in U.S. Dollars to the WM/Reuters FX Closing Spot Rate at 4 p.m. London time on the valid value dates for cash settlement.

**B. The FX Market is The Largest Financial Market in the World With the U.S. Dollar as the Dominant Currency**

48. According to the Bank for International Settlements Triennial Central Bank Survey dated September 2013 (the “2013 BIS Survey”), trading in foreign exchange markets averaged \$5.3 trillion (USD) per day in April 2013. This is up from \$4.0 trillion (USD) in April 2010 and \$3.3 trillion (USD) in April 2007. FX swaps were the most actively traded instruments in April 2013, at \$2.2 trillion (USD) per day, followed by spot trading at \$2.0 trillion (USD), \$680 billion (USD) in the outright forward market. The U.S. dollar remained the dominant vehicle currency; it was on one side of 87% of all FX trades in April 2013. The euro was the second most traded currency, but its share fell to 33% in April 2013 from 39% in April 2010. The turnover of the Japanese yen increased significantly between the 2010 and 2013 surveys. So too did that of several emerging market currencies, and the Mexican peso and Chinese renminbi entered the list of the top 10 most traded currencies. Further, FX trading became further concentrated in the largest financial centers. In April 2013, sales desks in the U.S., U.K.,

Singapore, and Japan intermediated 71% of foreign exchange trading, whereas in April 2010 their combined share was 66%.

49. According to another triennial survey published by The Federal Reserve Bank of New York in April 2013 entitled “The Foreign Exchange and Interest Rate Derivatives Markets,” daily foreign exchange turnover in the United States averaged \$1.263 trillion (USD) in April 2013, an increase of 46% from 2010, continuing strong growth reported in past surveys. Of the five instruments comprising foreign exchange turnover in the United States (*i.e.*, spot, forwards, FX swaps, currency swaps, and FX options), forwards trading increased the most, by 105%, from \$111 billion (USD) to \$228 billion (USD) from the 2010 survey. Trading in FX options increased by 87%, from \$38 billion (USD) to \$71 billion (USD) from the 2010 survey. Spot transactions increased 37% from \$452 billion (USD) to \$620 billion (USD) from the 2010 survey and FX swaps increased 34% from \$255 billion (USD) to \$341 billion (USD) from the 2010 survey.

## **II. Defendants Conspired to Manipulate WM/Reuters FX Rates for Financial Gain**

50. Beginning as early as 2003 and continuing through the present, Defendants conspired and colluded to manipulate WM/Reuters FX rates to artificial levels. They did so to make ill-gotten profits on WM/Reuters-based financial instruments held by them or their co-conspirators.

51. During the Class Period, Defendants intentionally rigged and manipulated the WM/Reuters FX rates through diverse and interrelated means including: (i) coordinating their FX trading in instant message chat rooms shamelessly referring to themselves as members of “The Cartel,” “The Bandits’ Club,” “The Dream Team” and “The Mafia”; (ii) executing their own FX trades before client trades using their knowledge of pending client trades, an unlawful practice known as front running; and (iii) concentrating a large number of low-volume trades

before and during the one minute trading windows when the WM/Reuters FX rates are set, focusing on the 4 p.m. London (11 a.m. New York) trading window, a classic manipulative trading strategy known as “banging the close.”

52. To ensure that their manipulation of the WM/Reuters FX rates would be successful, Defendants conspired in instant message chat rooms they created called “The Cartel,” “The Bandits’ Club,” “The Dream Team” and “The Mafia” to coordinate their FX trading activity and rig the WM/Reuters FX rates. Prior to the 60-second window in which the WM/Reuters FX rates are fixed, Defendants’ traders knew their banks FX positions and as a result of their instant message chat rooms, knew other Defendants and their co-conspirators FX positions as well. Armed with this knowledge, Defendants and their co-conspirators knew the artificial direction the WM/Reuters FX rates needed to move in order to derive illicit profits at the expense of other market participants. In order to further their conspiracy and guarantee success in creating an artificial price impact on the WM/Reuters FX rates, Defendants would “bang the close” and make a large number of low-volume trades within the one-minute window when the WM/Reuters FX rates are set.

53. Defendants’ traders even colluded with other day traders who then made bets on their behalf. *Bloomberg* revealed that Defendants’ traders would use their mobile phones and instant messages to inform day traders of details of impending client orders. The day traders would then place bets on the direction of currencies in Defendants’ traders’ personal accounts and any profit was later divvied up in cash between Defendants’ traders and the day traders. According to former traders with knowledge of the practice, a trader in receipt of a large client order likely to move the market would contact the day trader and tell them to buy or sell a particular currency at a certain time. The bets would typically only be placed for a few seconds or minutes, long enough for the traders to reap a profit.

### **III. Ongoing Global Government Investigations**

54. Investigations into the manipulation of the FX market commenced in June 2013, when the United Kingdom's Financial Conduct Authority ("FCA") opened an inquiry in response to concerns voiced by industry officials.

55. On October 4, 2013, the Swiss Financial Market Supervisory Authority, FINMA, began its investigation into several Swiss financial institutions and the financial institutions involvement in the possible manipulation of foreign exchange markets.

56. On October 11, 2013, the *Wall Street Journal* reported that the FBI began a criminal investigation into possible rigging of the FX markets.

57. On October 16, 2013, the FCA confirmed that it is "conducting investigations alongside several other agencies into a number of firms relating to trading on the foreign exchange (forex) market." As part of its investigation, the FCA is "gathering information from a wide range of sources including market participants."

58. Following the FCA's announcement, The Hong Kong Monetary Authority stated that it would begin an investigation into FX market manipulation.

59. Further, in late October 2013, the Commodity Futures Trading Commission ("CFTC") asked major currency-dealing banks, including Deutsche Bank and Citigroup to review their records as part of a global probe into possible foreign exchange currency manipulation. The banks have been asked to search records including traders' e-mails and chat sessions and have been provided with specific dates, phrases and keywords.

60. On October 24, 2013, the *Wall Street Journal* noted that Singapore, Asia's largest foreign exchange center also joined the global currency-market probe.

61. On October 29, 2013, the *Wall Street Journal* reported, that the U.S. Department of Justice's ("DOJ") Criminal Division launched a far-reaching probe into the FX market. The



head of the DOJ's Criminal Division, Mythili Raman stated that the DOJ's Criminal and Antitrust divisions "have an active and ongoing investigation into the possible manipulation of the foreign-exchange rate" as the DOJ is "responding aggressively and taking it very seriously. We are looking at global conduct, and you can expect a global response."

62. According to public reports, traders exchanged instant messages through Bloomberg terminals outlining details of their FX positions and discussing client orders, and made trades before key FX benchmarks (*i.e.*, the WM/Reuters FX rates) were set. Instant message chat rooms dubbed, "The Cartel," "The Bandits' Club," and "The Dream Team" (among other names) are the focus of the regulators investigation.

63. On November 20, 2013, the *Wall Street Journal* reported that the FBI made unannounced visits to the homes of Defendants' traders. For example, a Deutsche Bank director and New York-based currency trader, Robert Wallden, was visited at his home by the FBI. The FBI showed up at Wallden's home revealing chat transcripts where Wallden boasted about manipulating the FX market.

#### **IV. Recent Disclosures by Defendants Confirm the Existence of Government Investigations**

64. Defendant Barclays disclosed in its Interim Report released September 30, 2013, that Barclays Bank had received inquiries from various regulatory and enforcement authorities relating to their investigations into foreign exchange trading, including possible attempts to manipulate certain benchmark currency exchange rates or engage in other activities that would benefit their trading positions. Barclays stated it was reviewing its foreign exchange trading and is cooperating with the relevant authorities.

65. Defendant Citigroup disclosed in its Form 10-Q filed with the SEC on November 1, 2013, that it had received requests for information, from government agencies in the U.S. and other jurisdictions, regarding trading on the foreign exchange markets.

66. Defendant Deutsche Bank disclosed in its Interim Report released October 29, 2013, that it had received requests for information from certain regulatory authorities who are investigating trading on the foreign exchange market.

67. Defendant Goldman Sachs disclosed in its Form 10-Q filed with the SEC on November 6, 2013 that the sales, trading and clearance of currencies were among the government investigations with which it is cooperating.

68. Defendant HSBC disclosed in its Interim Management Statement released November 4, 2013, that the FCA, with other agencies in various countries, was conducting investigations relating to trading on the foreign exchange market.

69. Defendant JPMorgan disclosed in its Form 10-Q filed with the SEC on November 1, 2013 that it had received information requests from various government authorities regarding its foreign exchange trading business and that it was cooperating with the relevant authorities.

70. In a November 6, 2013 public statement, Defendant Lloyds revealed that the FCA requested Lloyds begin an internal investigation into its FX trading practices.

71. Defendant RBS disclosed in its Interim Management Statement released November 1, 2013, that it had received inquiries from various governmental and regulatory authorities, including the FCA, in connection with their investigations into foreign exchange trading activities. RBS stated that it was cooperating with these investigations.

72. Defendant UBS disclosed in its Quarterly Report released October 29, 2013, that it began an internal review of its foreign exchange business following a June 2013 media report of widespread irregularities in the foreign exchange markets. UBS has received requests from

various authorities relating to their foreign exchange businesses and is cooperating in the investigation. UBS also disclosed that it has taken and will take appropriate action against certain employees as a result of UBS's internal review.

**V. Dozens of Defendants Employees Have Been Suspended or Placed On Leave**

73. Amid global investigations into the manipulation of global FX rates, more than a dozen of Defendants' traders have been suspended or placed on leaves of absence.

74. Citigroup placed its head of European spot foreign-exchange trading, Rohan Ramchandani, on leave.

75. JP Morgan also placed its London-based head of spot trading for Group of 10 Currencies, (and former RBS trader) Richard Usher, on leave.

76. Former Barclays and UBS currency trader, Matt Gardiner was placed on leave by his current employer Standard Chartered PLC. According to public reports, Gardiner, along with former RBS and current JPMorgan trader Richard Usher were identified as part of the instant message group used by senior traders to outline details of their positions and client orders as well as make trades before key benchmarks were set.

77. UBS also disclosed that it has taken disciplinary action against a number of its employees, including senior currency traders Roger Boehler and Niall O'Riordan, as a result of its own internal investigation. According to public reports, Roger Boehler was UBS's global head of FX trading based in Stamford, Connecticut. O'Riordan was UBS's co-global head of FX G-10 and emerging market spot trading.

78. On October 29, 2013, Deutsche disclosed that it was conducting an internal investigation of approximately 50 employees in connection with manipulation of the FX market.

79. Barclays placed six traders on leave after it turned over chat room transcripts to the FCA. The traders included Chris Ashton and Mark Clark in London, Jack Murray in Tokyo and multiple unnamed traders in New York.

80. RBS also suspended two of its London currency traders, Julian Munson and Paul Nash.

81. On November 1, 2013, the *Wall Street Journal* reported that many of the disciplined traders, including UBS's O'Riordan, Citigroup's Ramchandani and JPMorgan's Usher, were members of the Bank of England's London Foreign Exchange Joint Standing Committee chief dealers' subgroup. The committee, which included a dozen senior traders from multiple banks, meets every three to four months to discuss FX trading. The *Wall Street Journal* revealed that in 2011, the committee warned that banks "should prohibit the deliberate exploitation of electronic dealing systems to generate artificial price behavior."

**VI. Plaintiffs' Independent Economic Analyses Show Repeating Patterns of Upward and Downward Spikes in Ten WM/Reuters Exchange Rates Around the 4 P.M. Fix Time Consistent with Price Artificiality Caused by Collusion and Manipulation**

82. Plaintiffs' economic analysis reveals repeating patterns of upward and downward spikes in exchange rates at or around the 4 p.m. London time WM/Reuters fix (11 a.m. NY time) consistent with manipulation and collusion (rather than normal market activity) and the concerns raised by governmental authorities in ongoing investigations both domestically and abroad regarding alleged anticompetitive and manipulative activities in the FX market. In addition to repeating spikes in prices around the WM/Reuters fix, Plaintiffs' additional analyses consistently reveal "outlier" prices and price movements at the 4 p.m. WM/Reuters fix relative to prices preceding and/or succeeding the 4 p.m. fix. For example, Plaintiffs analyzed intraday currency

exchange price data<sup>1</sup> for one-minute intervals on the last trading day of each month from January 2009 through October 2013 and calculated the squared deviation or difference between the price at that particular minute and the average price taken from a preceding and/or succeeding window of time (*i.e.*, 30 minutes). This analysis vividly shows that the price changes around the WM/Reuters fix were significantly greater than at any other time during the day. This is consistent with price artificiality caused by collusion and manipulation of these exchange rates around the fix.

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<sup>1</sup> Plaintiffs' analysis included the following FX rates: (1) AUD-USD, the exchange rate of US Dollar per one Australian dollar; (2) EUR-USD, the exchange rate of US Dollar per one Euro; (3) GBP-USD, the exchange rate of US Dollar per one British pound; (4) NZD-USD, the exchange rate of US Dollar per one New Zealand dollar; (5) USD-CAD, the exchange rate of Canadian Dollar per one US dollar; (6) USD-CHF, the exchange rate of Swiss Franc per one US dollar; (7) USD-DKK, the exchange rate of Danish Krone per one US dollar; (8) USD-JPY, the exchange rate of Japanese Yen per one US dollar; (9) USD-NOK, the exchange rate of Norwegian Krone per one US dollar; and (10) USD-SEK, the exchange rate of Swedish Krona per one US dollar.

FIGURE 1

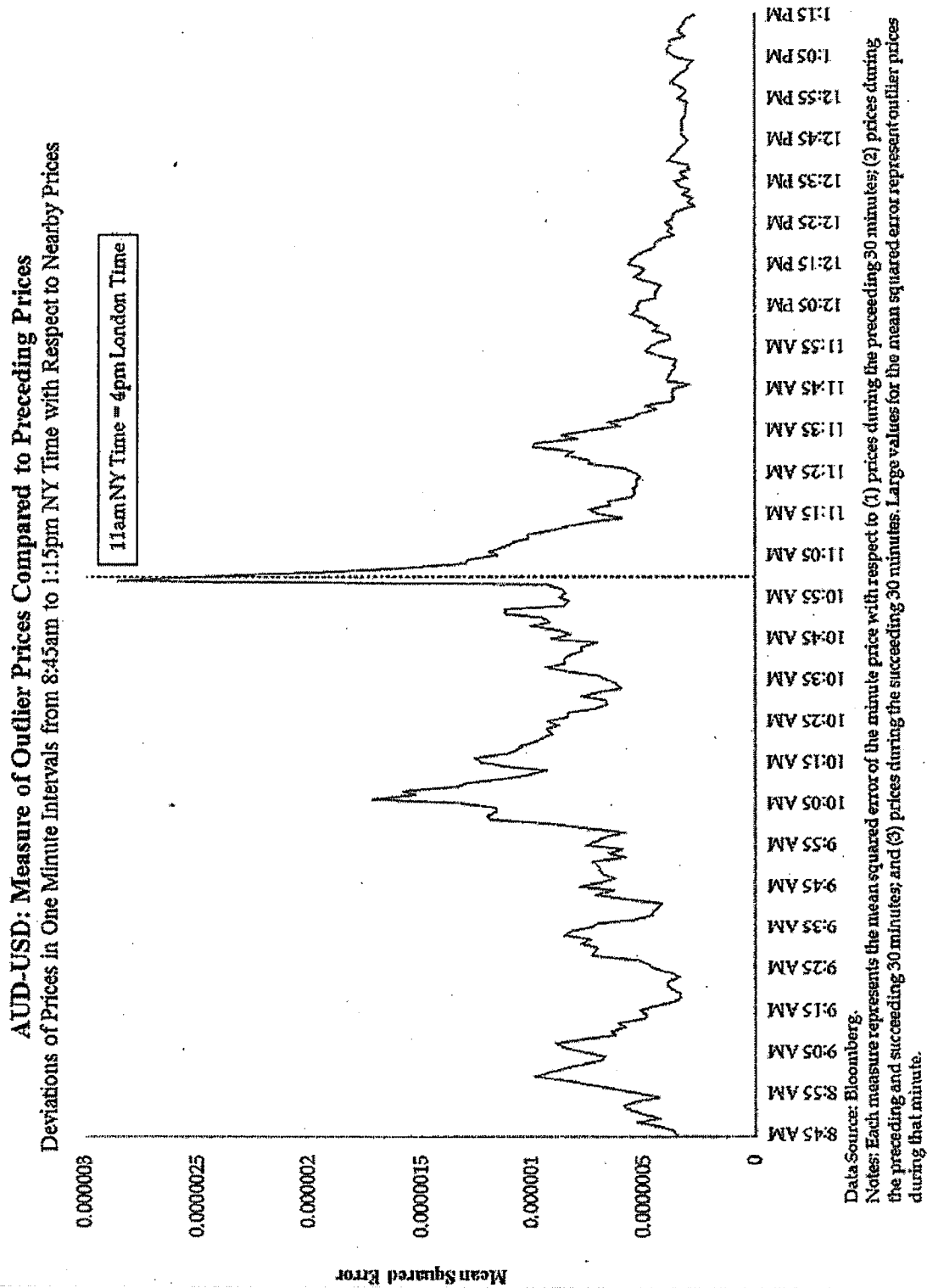


FIGURE 2

**AUD-USD: Measure of Outlier Prices Compared to Preceding and Succeeding Prices**  
 Deviations of Prices in One Minute Intervals from 8:45am to 1:15pm NY Time with Respect to Nearby Prices

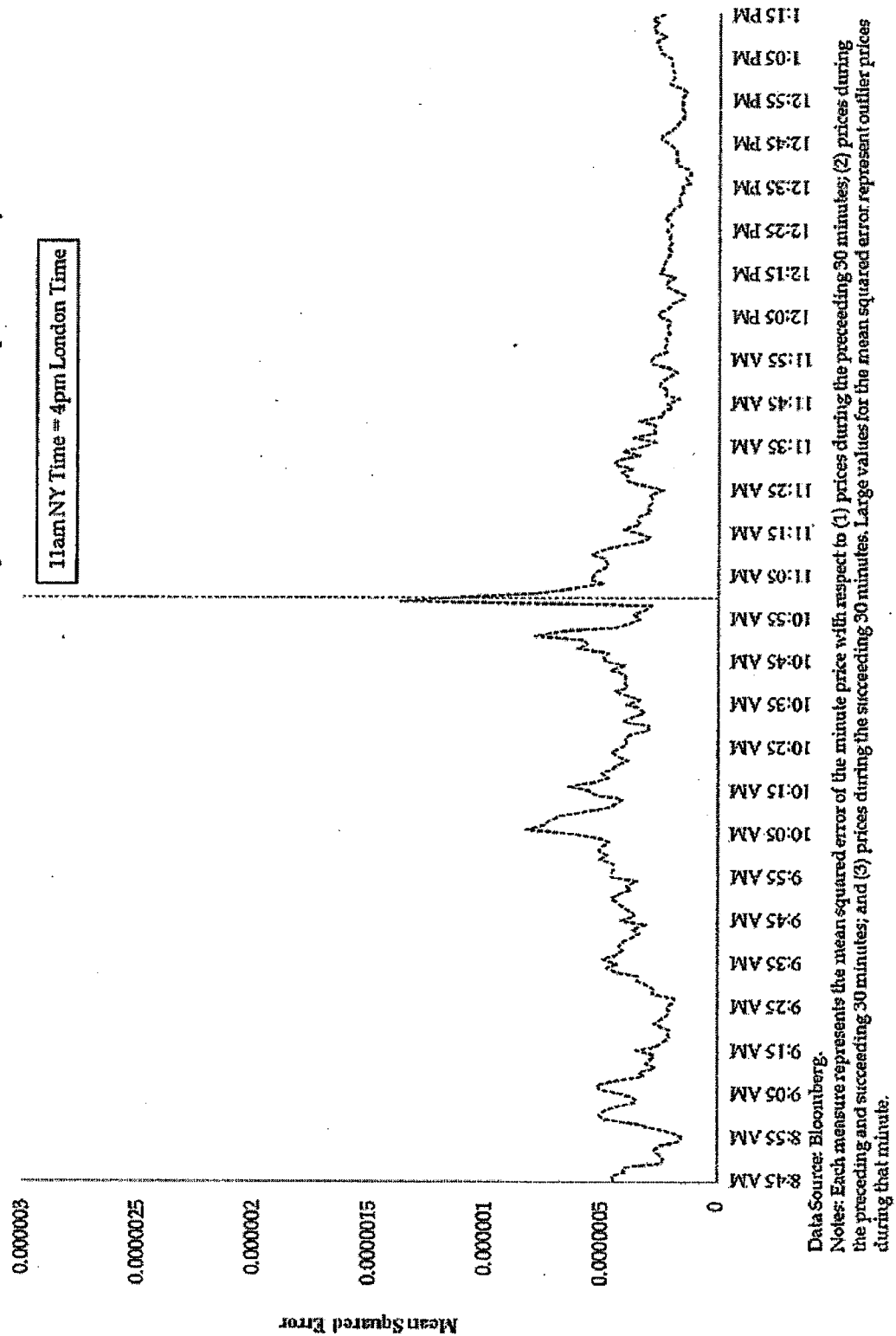


FIGURE 3

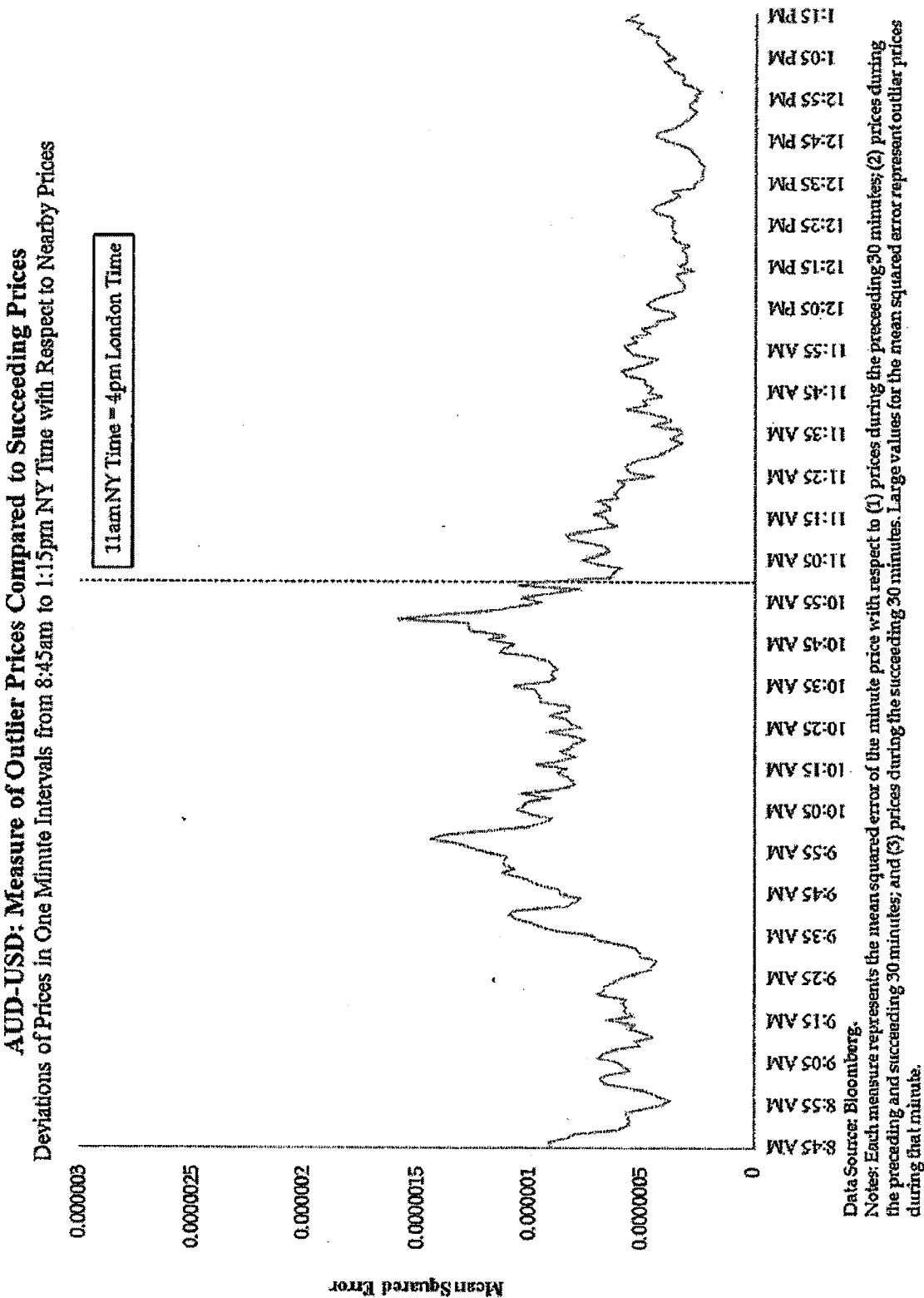




FIGURE 4

AUD-USD: Summary of Outliers				
Last Trading Day of Each Month (Jan 2009 - October 2013)				
		+/- 10 Minutes from 11am NY (4pm London)	+/- 20 Minutes from 11am NY (4pm London)	+/- 30 Minutes from 11am NY (4pm London)
<b>Full Period</b>	<b>Total Number of Days</b>	54	54	54
	<b>Non-Outlier Days</b>	39	32	28
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	6	12	14
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	4	4	4
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	5	6	8
	<b>Total Number of Outlier Days</b>	15	22	26
	<b>Number of Outlier Days as a Portion of All Days</b>	27.8%	40.7%	48.1%
<b>2009</b>	<b>Total Number of Days</b>	12	12	12
	<b>Non-Outlier Days</b>	7	7	6
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	3	3	3
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	2	2	2
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	0	0	1
	<b>Total Number of Outlier Days</b>	5	5	6
	<b>Number of Outlier Days as a Portion of All Days</b>	41.7%	41.7%	50.0%
<b>2010</b>	<b>Total Number of Days</b>	11	11	11
	<b>Non-Outlier Days</b>	7	4	3
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	2	5	5
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	1	1	1
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	1	1	2
	<b>Total Number of Outlier Days</b>	4	7	8
	<b>Number of Outlier Days as a Portion of All Days</b>	36.4%	63.6%	72.7%
<b>2011</b>	<b>Total Number of Days</b>	11	11	11
	<b>Non-Outlier Days</b>	9	5	5
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	0	4	4
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	1	0	0
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	1	2	2
	<b>Total Number of Outlier Days</b>	2	6	6
	<b>Number of Outlier Days as a Portion of All Days</b>	18.2%	54.5%	54.5%
<b>2012</b>	<b>Total Number of Days</b>	11	11	11
	<b>Non-Outlier Days</b>	7	7	6
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	1	0	1
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	0	1	1
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	3	3	3
	<b>Total Number of Outlier Days</b>	4	4	5
	<b>Number of Outlier Days as a Portion of All Days</b>	36.4%	36.4%	45.5%
<b>2013</b>	<b>Total Number of Days</b>	9	9	9
	<b>Non-Outlier Days</b>	9	9	8
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	0	0	1
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	0	0	0
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	0	0	0
	<b>Total Number of Outlier Days</b>	0	0	1
	<b>Number of Outlier Days as a Portion of All Days</b>	0.0%	0.0%	11.1%
Data Source: Bloomberg.				
Note: Interval of time is defined around 11 a.m. NY time / 4 p.m. London time.				

FIGURE 5

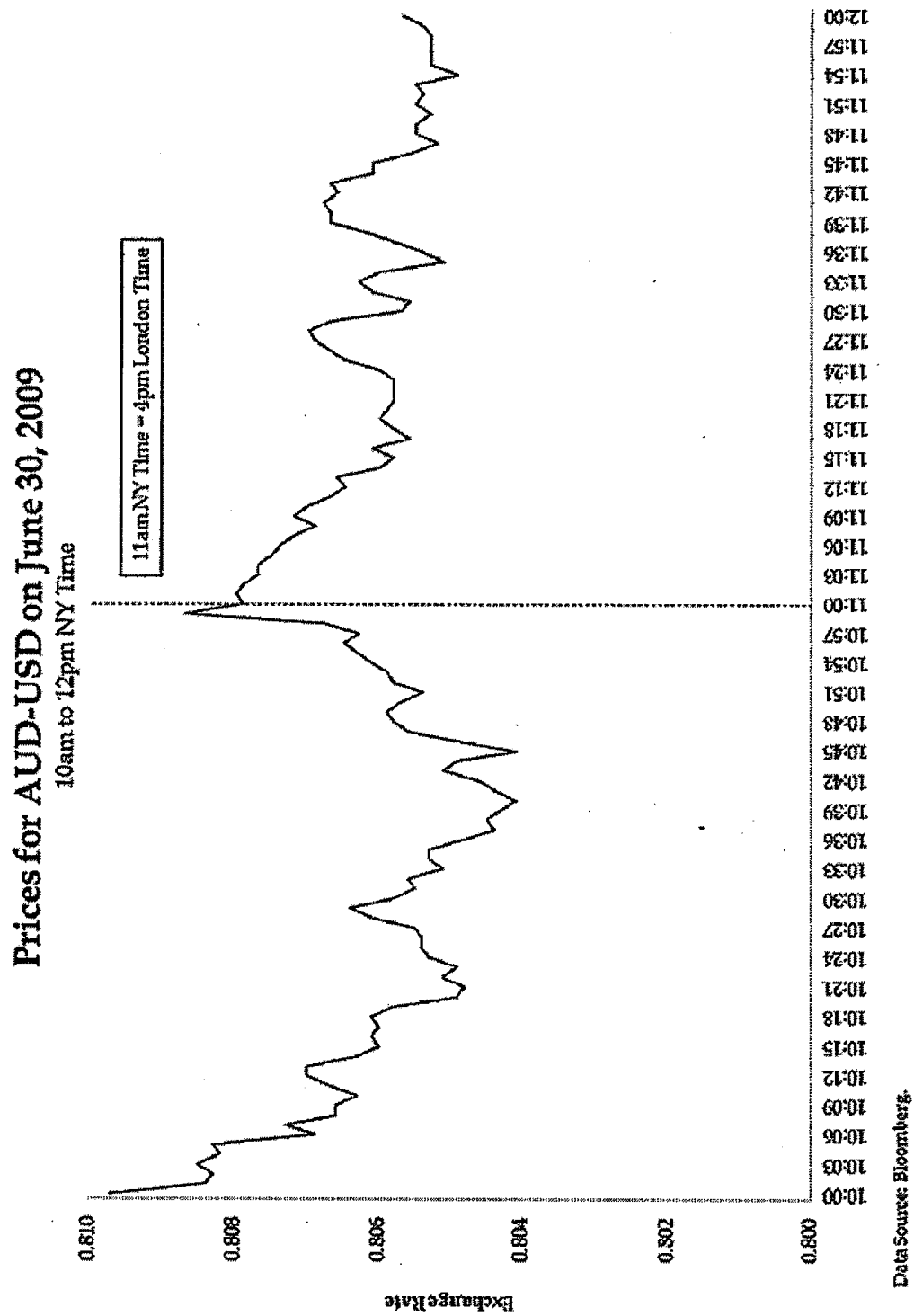


FIGURE 6

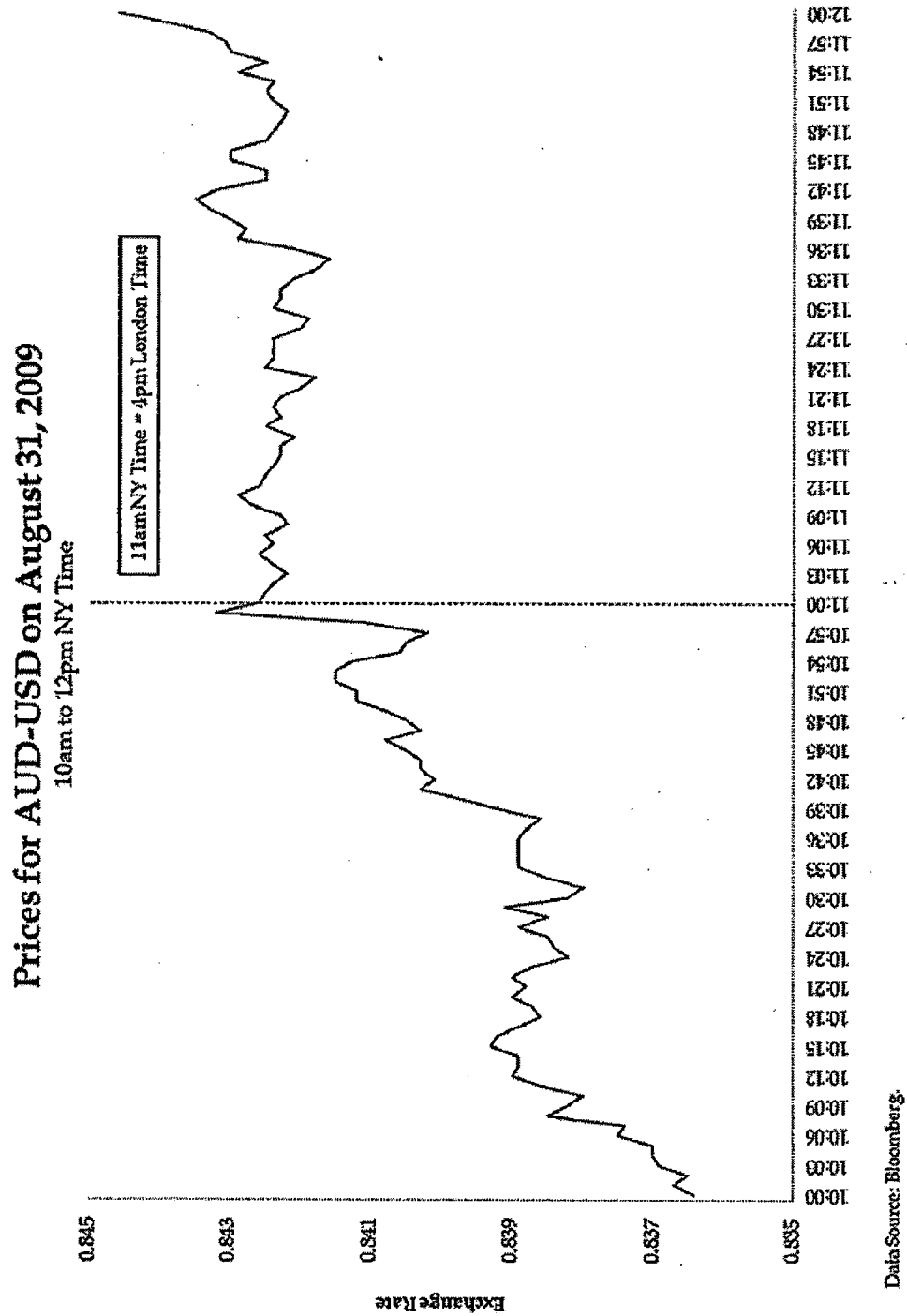


FIGURE 7

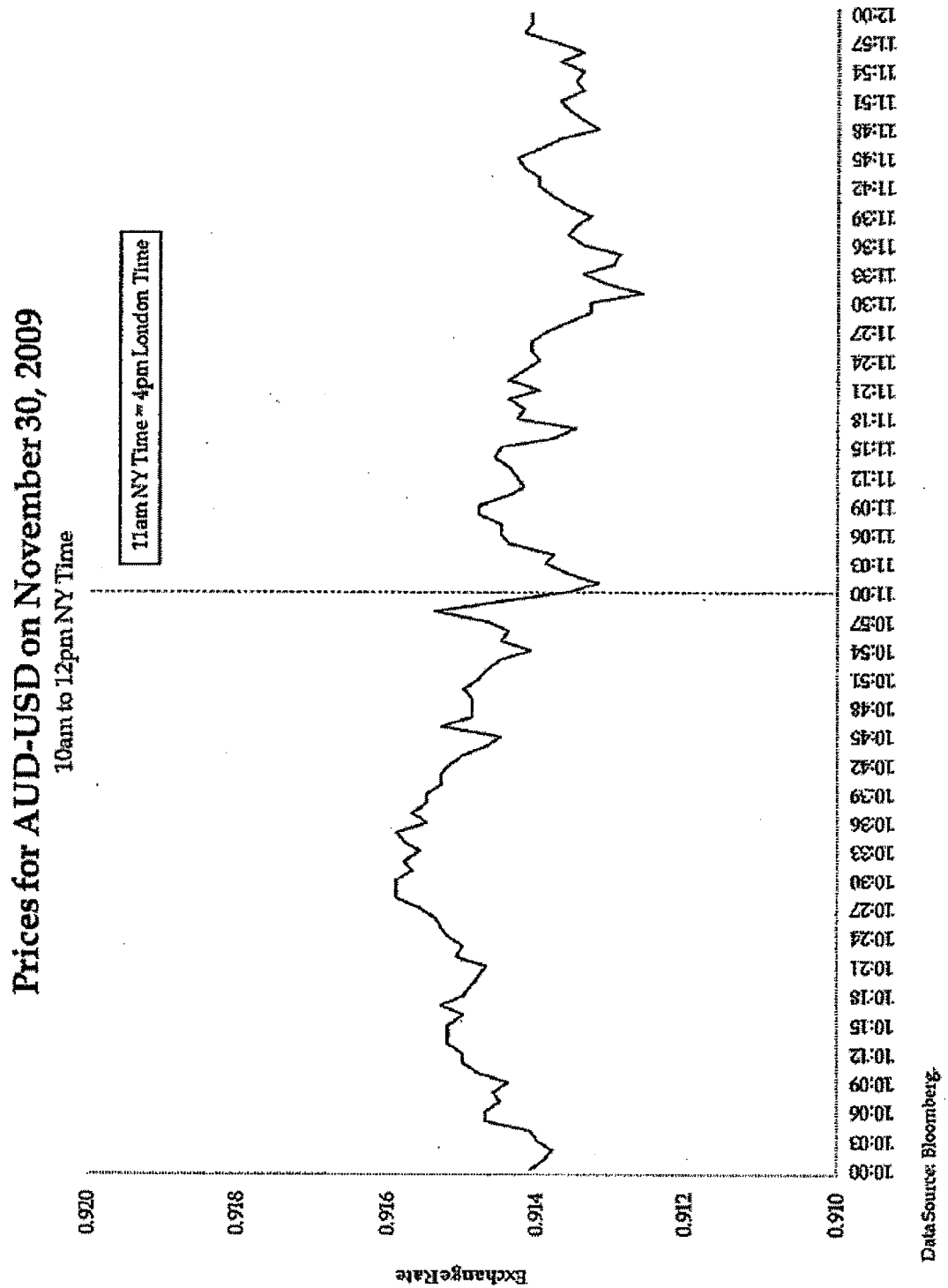


FIGURE 8

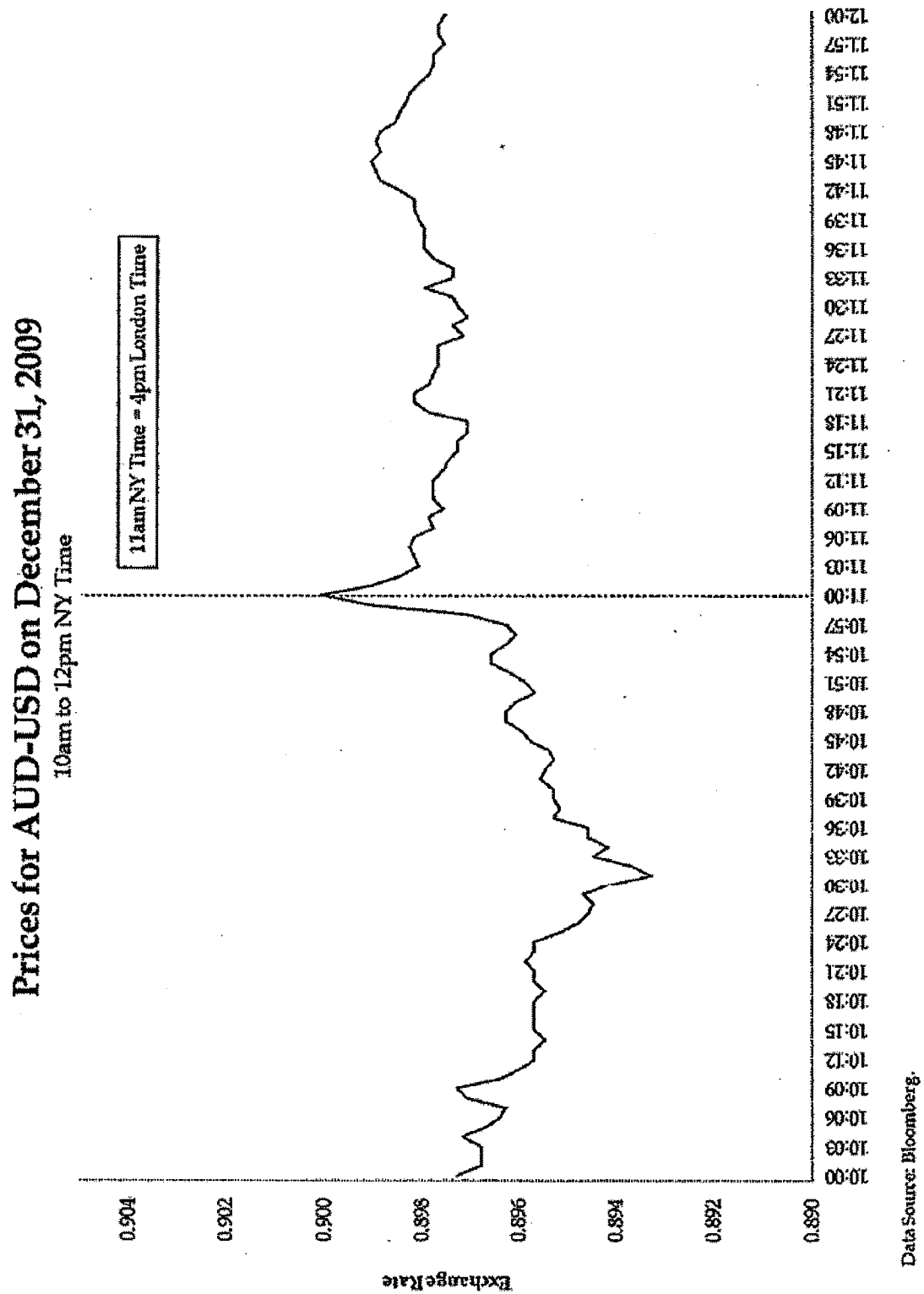


FIGURE 9

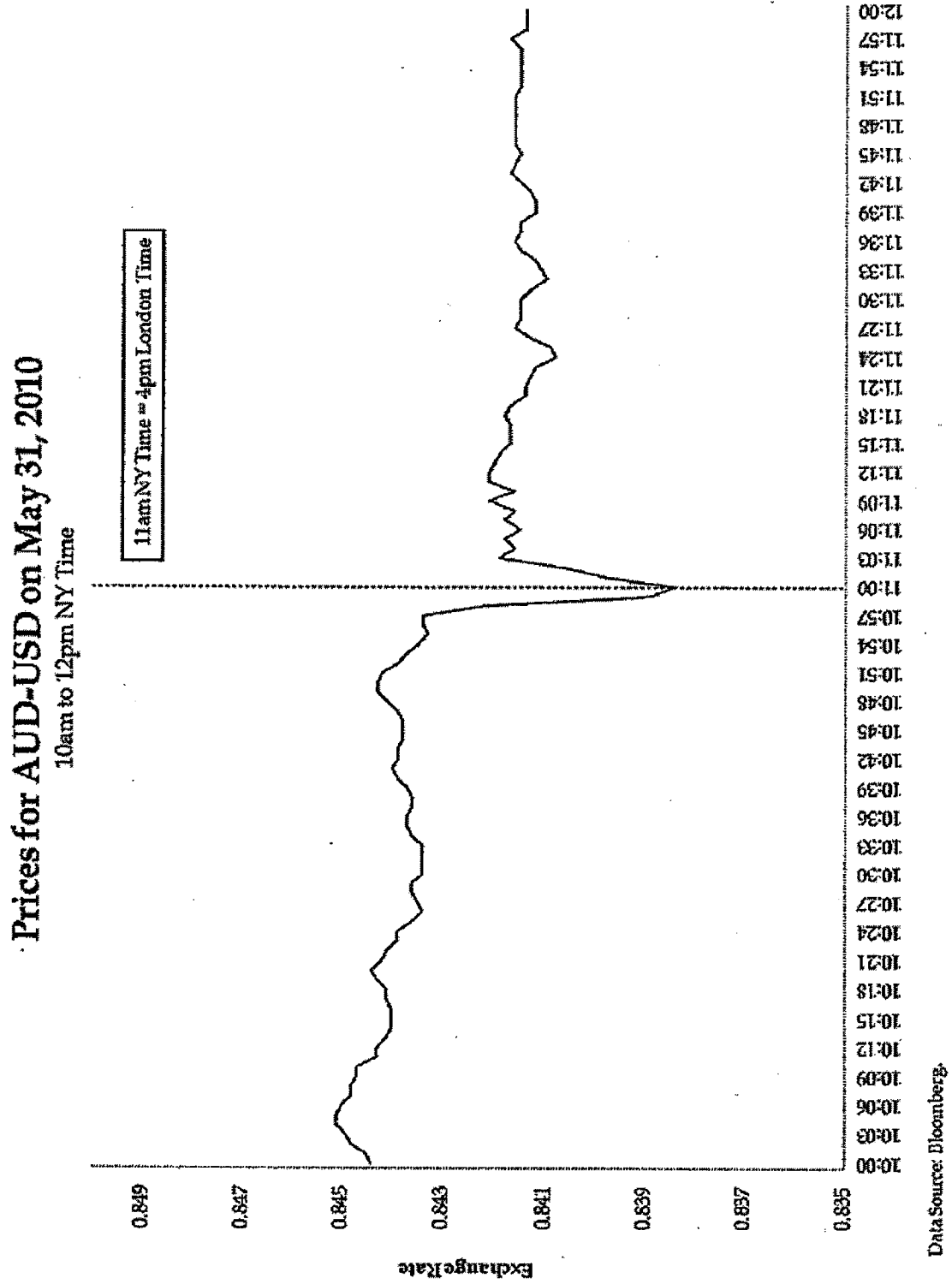


FIGURE 10

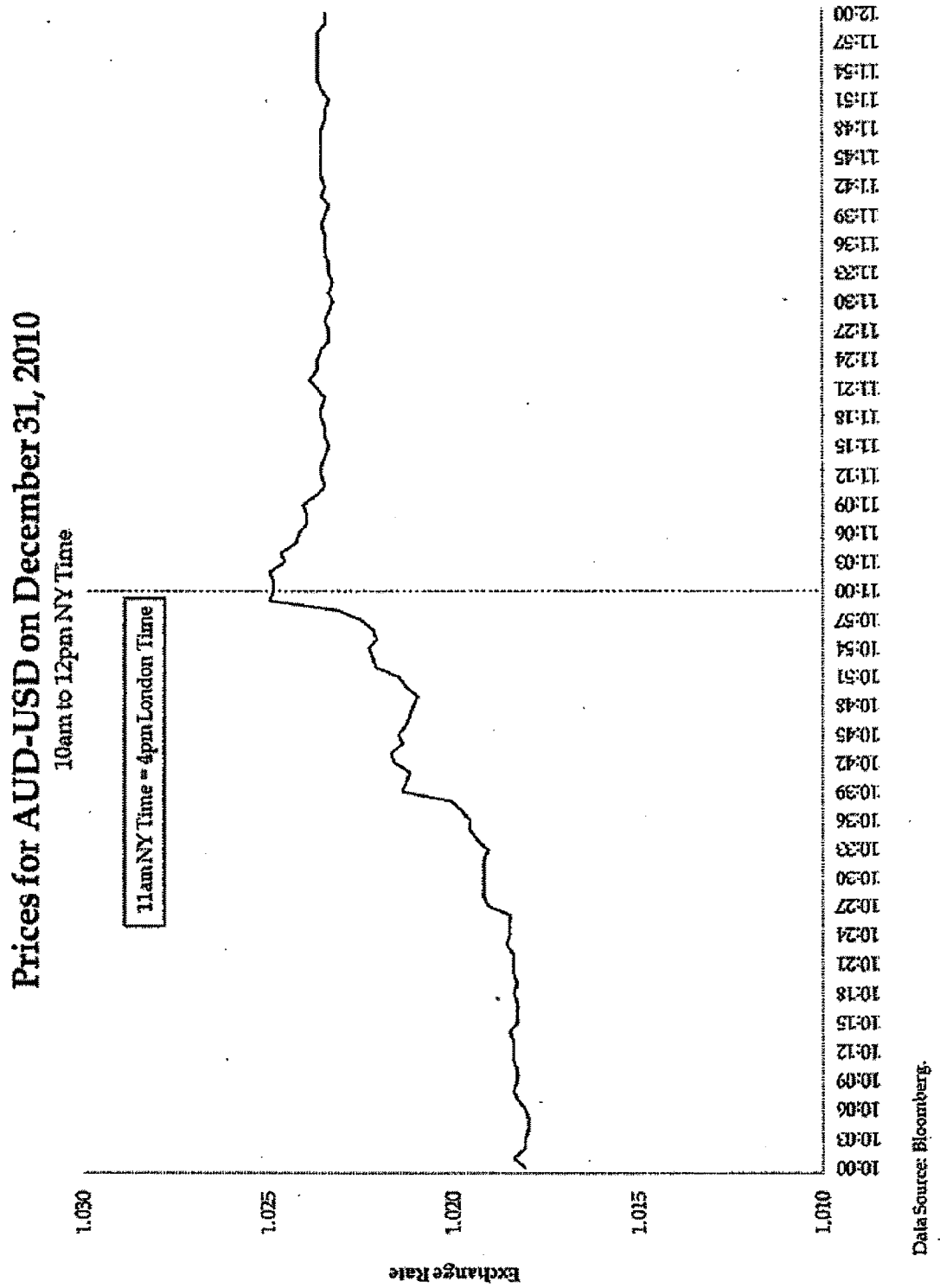


FIGURE 11

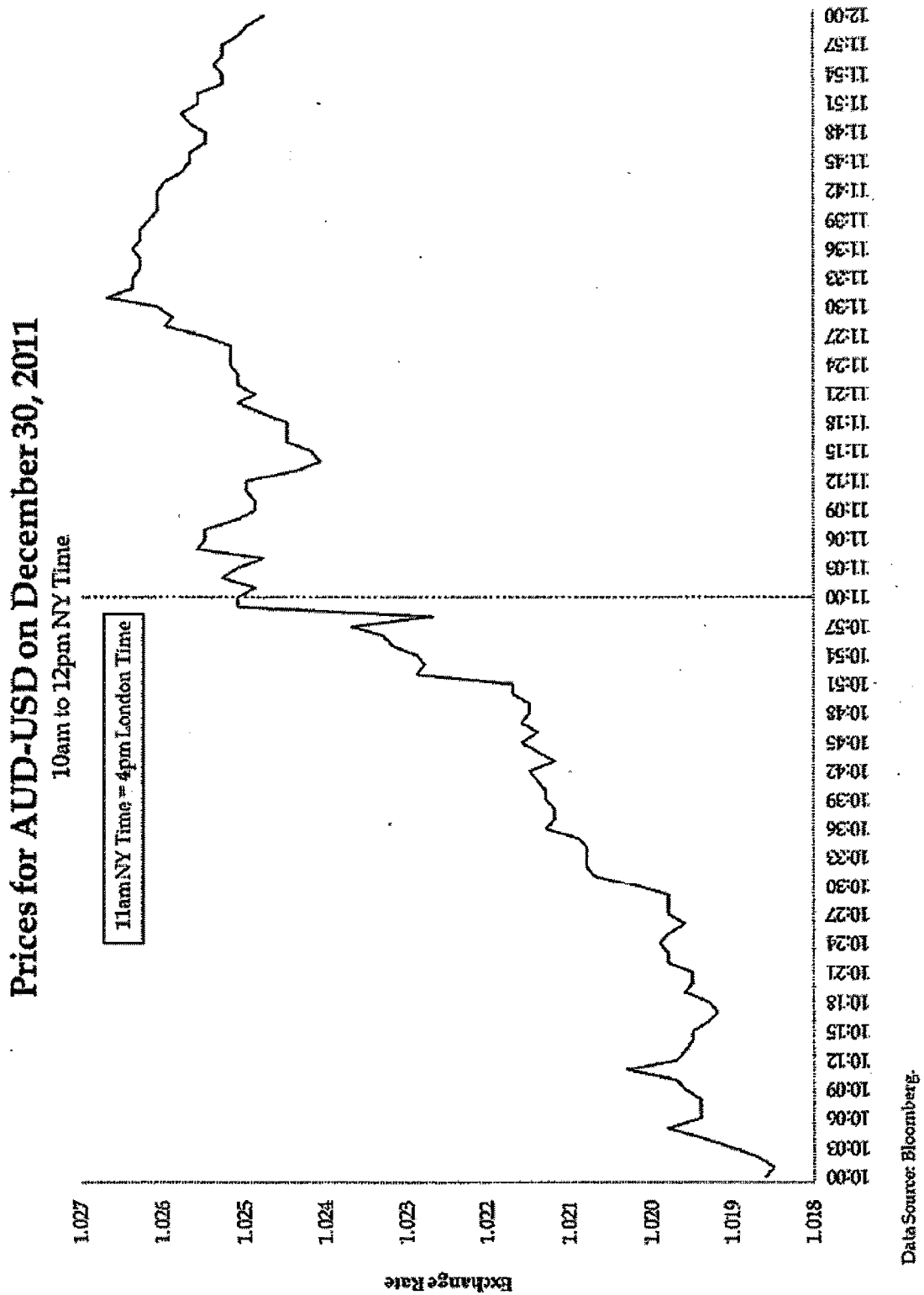
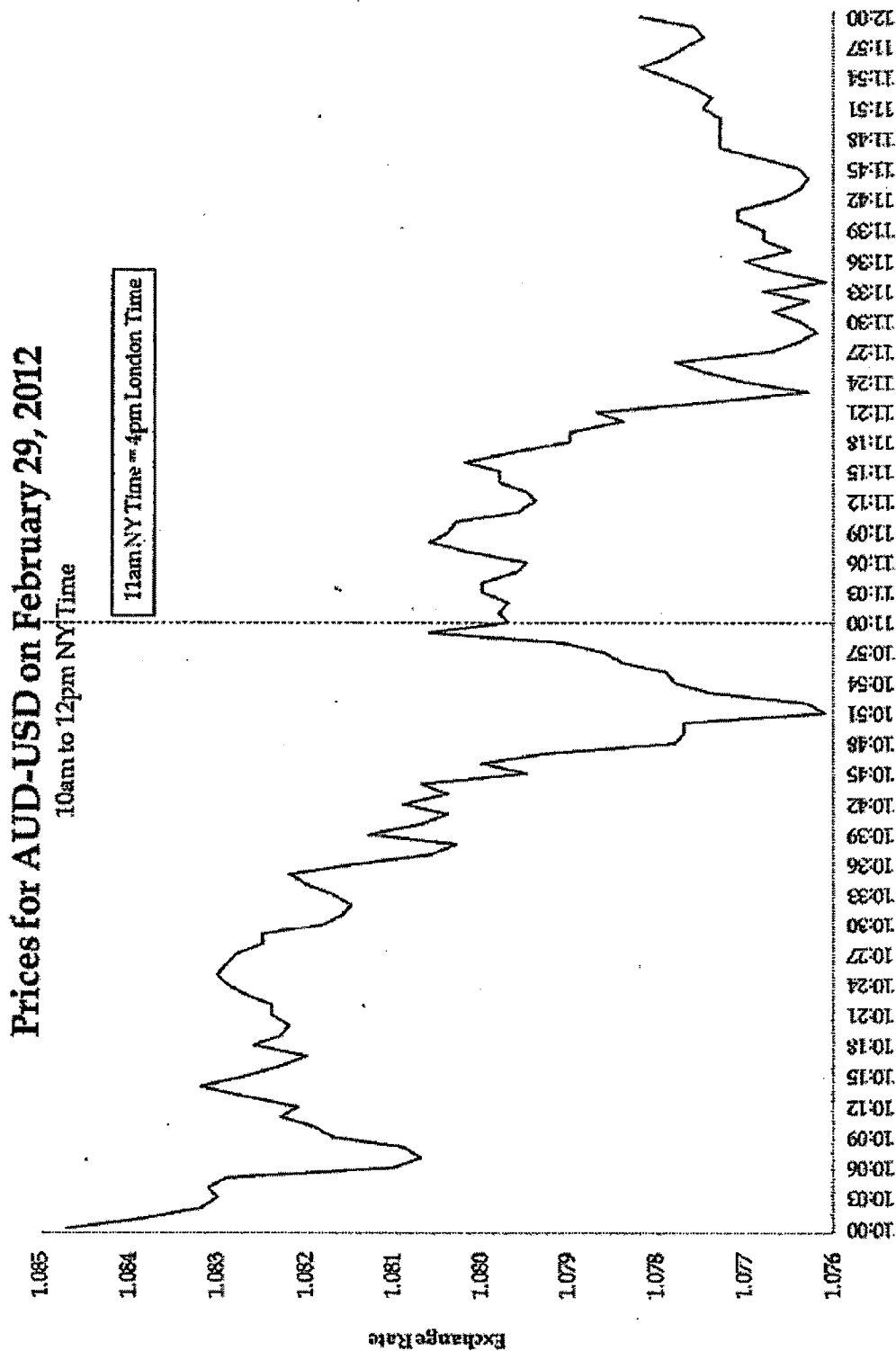




FIGURE 12



Data Source: Bloomberg

FIGURE 13

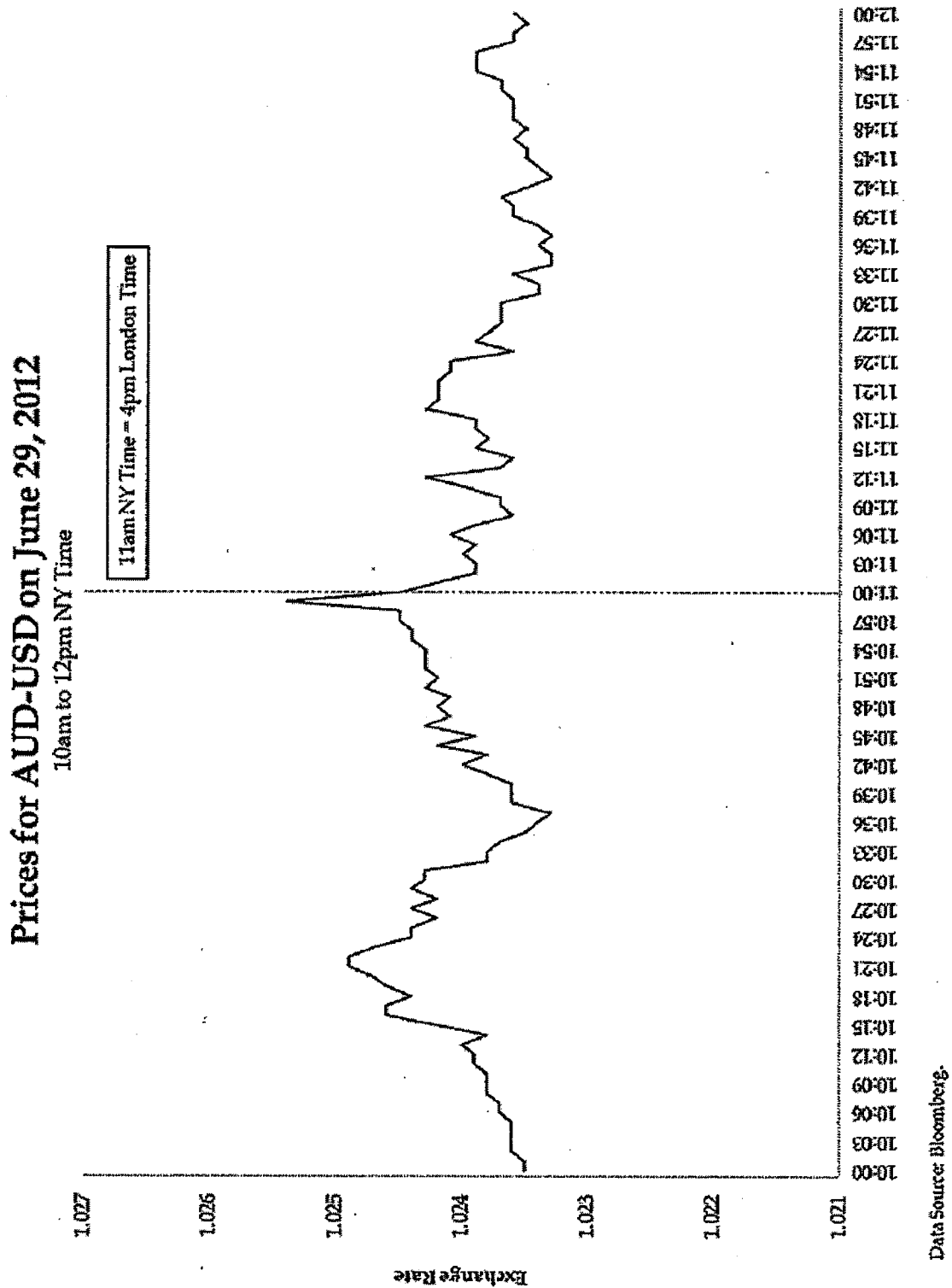


FIGURE 14

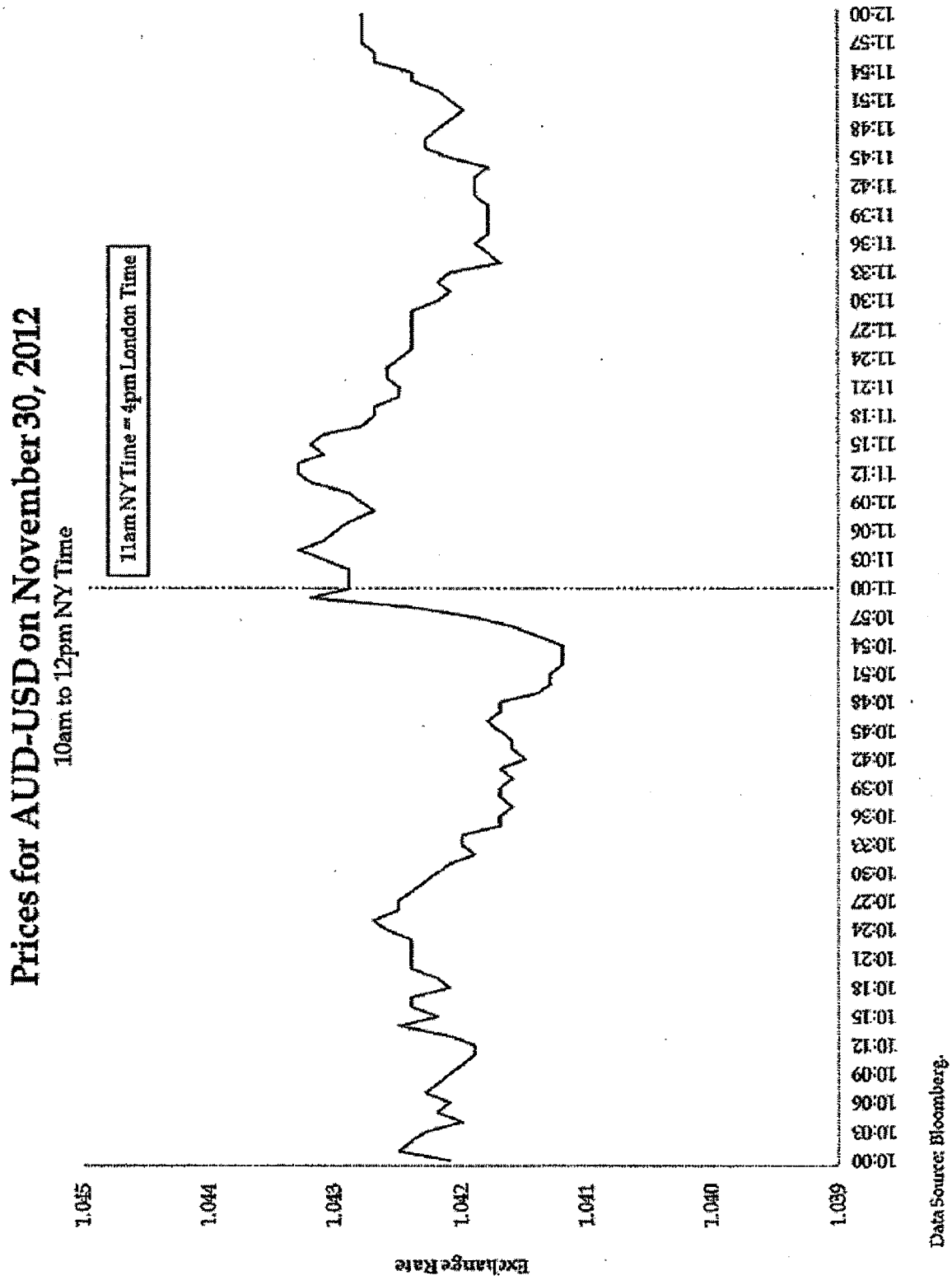


FIGURE 15

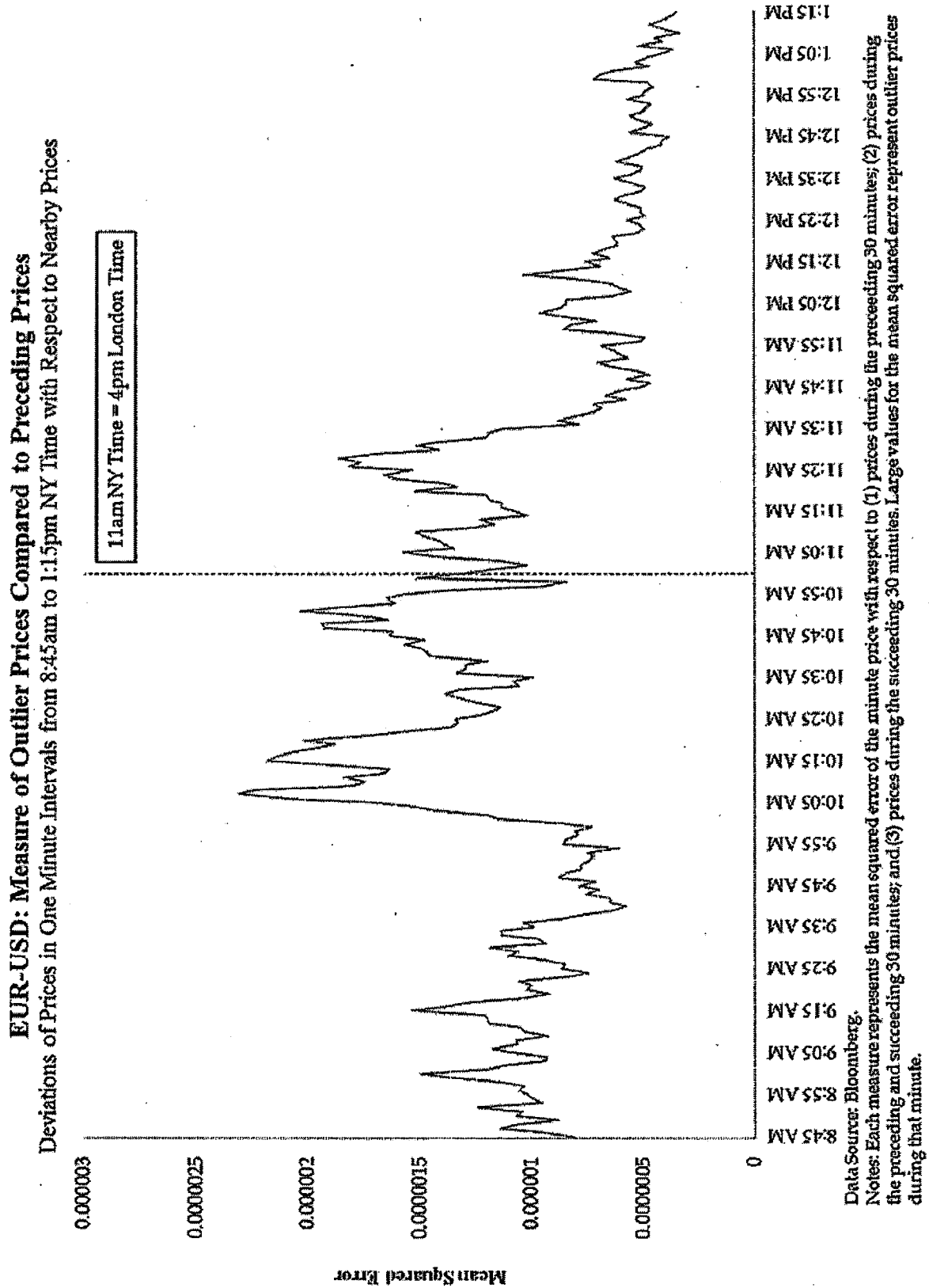


FIGURE 16

# **EUR-USD: Measure of Outlier Prices Compared to Preceding and Succeeding Prices**

Deviations of Prices in One Minute Intervals from 8:45am to 1:15pm NY Time with Respect to Nearby Prices

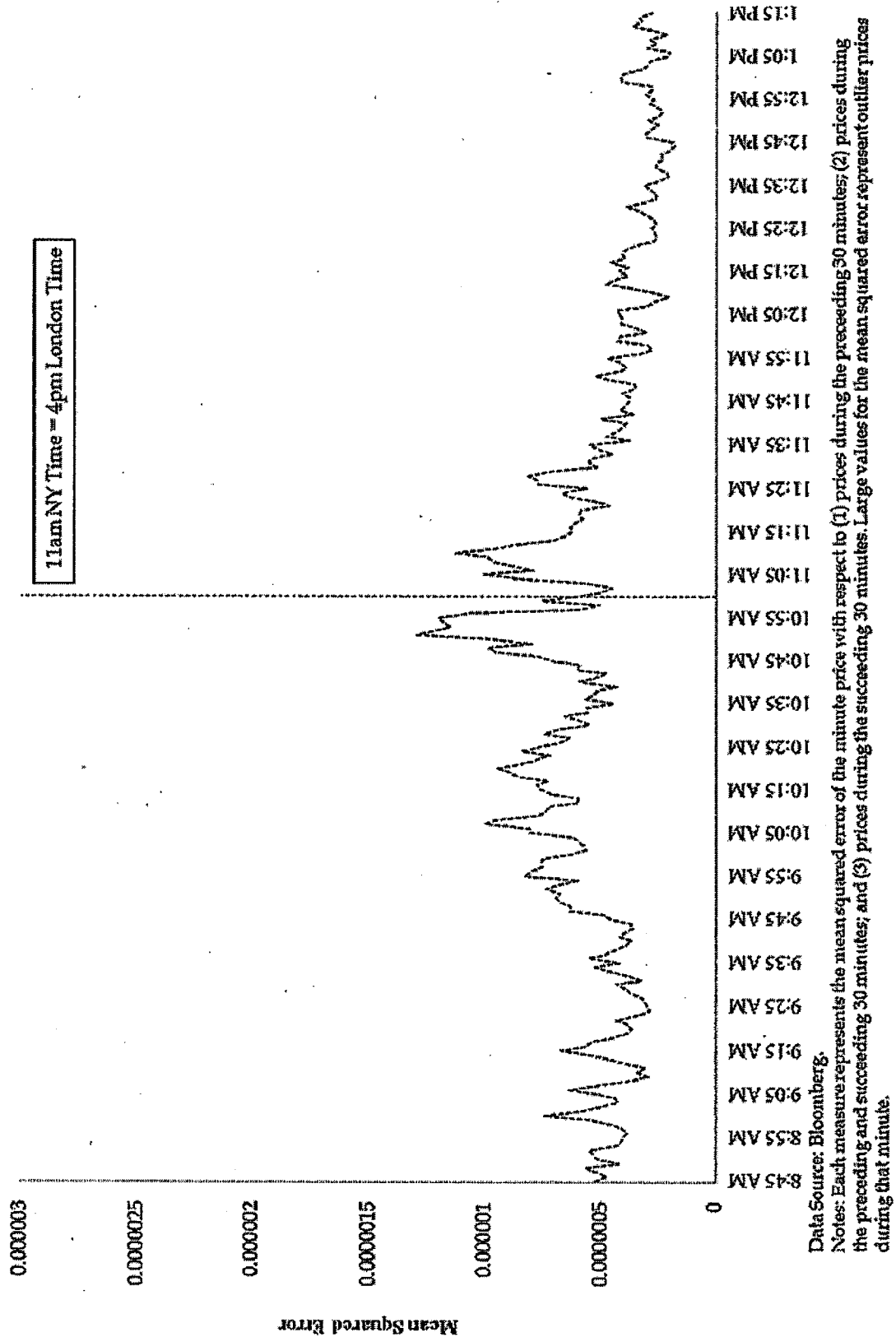


FIGURE 17

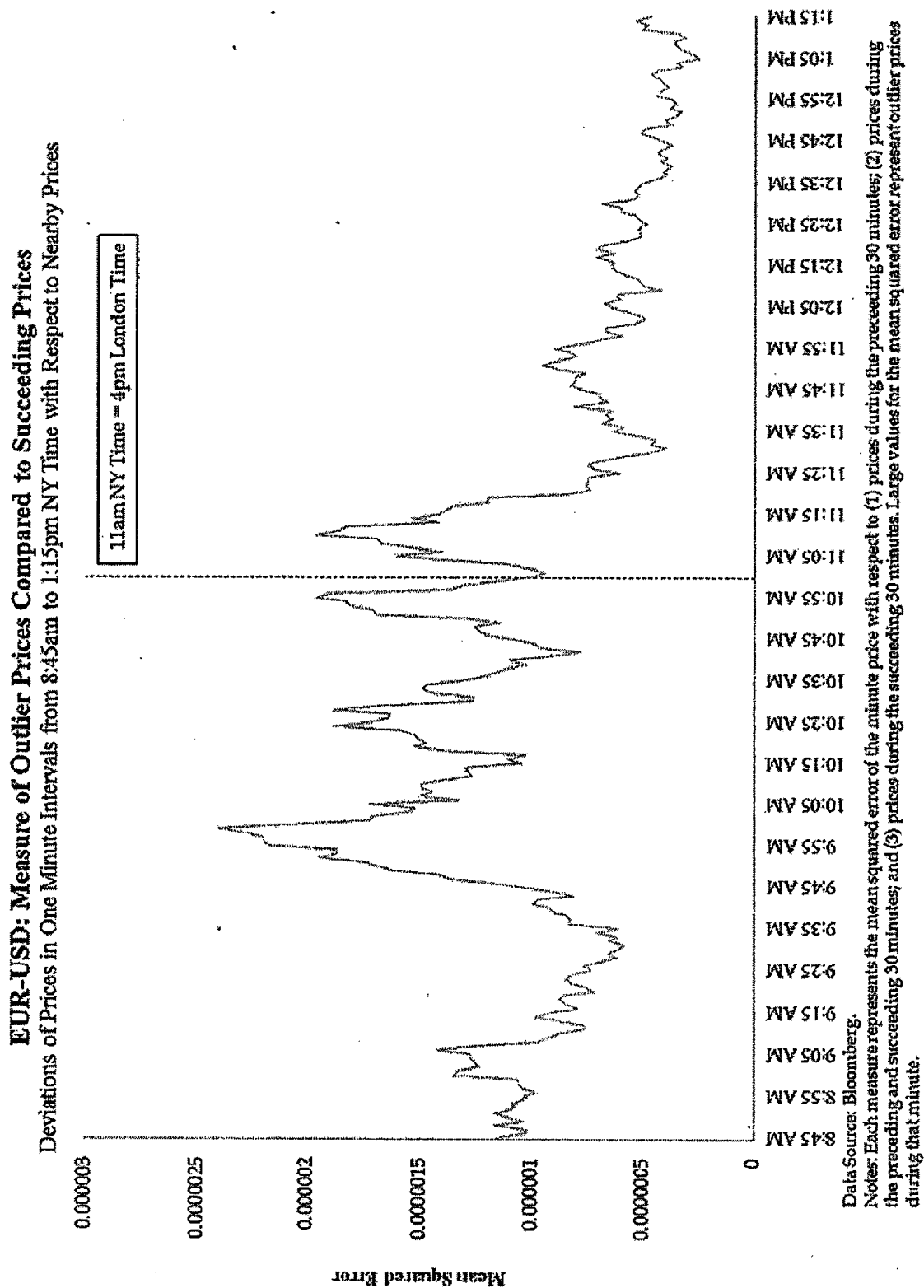


FIGURE 18

Euro-USD: Summary of Outliers				
Last Trading Day of Each Month (Jan 2009 - October 2013)				
		+/- 10 Minutes from 11am NY (4pm London)	+/- 20 Minutes from 11am NY (4pm London)	+/- 30 Minutes from 11am NY (4pm London)
<b>Full Period</b>	<b>Total Number of Days</b>	54	54	54
	Non-Outlier Days	36	32	28
	Number of Outlier Days Comparing Price to Preceding Prices	10	10	10
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	8	7	8
	Number of Outlier Days Comparing Price to Succeeding	0	5	8
	<b>Total Number of Outlier Days</b>	18	22	26
	<b>Number of Outlier Days as a Portion of All Days</b>	33.3%	40.7%	48.1%
<b>2009</b>	<b>Total Number of Days</b>	12	12	12
	Non-Outlier Days	5	4	3
	Number of Outlier Days Comparing Price to Preceding Prices	4	4	2
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	3	3	4
	Number of Outlier Days Comparing Price to Succeeding	0	1	3
	<b>Total Number of Outlier Days</b>	7	8	9
	<b>Number of Outlier Days as a Portion of All Days</b>	58.3%	66.7%	75.0%
<b>2010</b>	<b>Total Number of Days</b>	11	11	11
	Non-Outlier Days	6	6	4
	Number of Outlier Days Comparing Price to Preceding Prices	3	2	4
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	2	2	2
	Number of Outlier Days Comparing Price to Succeeding	0	1	1
	<b>Total Number of Outlier Days</b>	5	5	7
	<b>Number of Outlier Days as a Portion of All Days</b>	45.5%	45.5%	63.6%
<b>2011</b>	<b>Total Number of Days</b>	11	11	11
	Non-Outlier Days	10	8	8
	Number of Outlier Days Comparing Price to Preceding Prices	1	2	2
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	0	0	0
	Number of Outlier Days Comparing Price to Succeeding	0	1	1
	<b>Total Number of Outlier Days</b>	1	3	3
	<b>Number of Outlier Days as a Portion of All Days</b>	9.1%	27.3%	27.3%
<b>2012</b>	<b>Total Number of Days</b>	11	11	11
	Non-Outlier Days	9	8	7
	Number of Outlier Days Comparing Price to Preceding Prices	0	1	1
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	2	2	2
	Number of Outlier Days Comparing Price to Succeeding	0	0	1
	<b>Total Number of Outlier Days</b>	2	3	4
	<b>Number of Outlier Days as a Portion of All Days</b>	18.2%	27.3%	36.4%
<b>2013</b>	<b>Total Number of Days</b>	9	9	9
	Non-Outlier Days	6	6	6
	Number of Outlier Days Comparing Price to Preceding Prices	2	1	1
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	1	0	0
	Number of Outlier Days Comparing Price to Succeeding	0	2	2
	<b>Total Number of Outlier Days</b>	3	3	3
	<b>Number of Outlier Days as a Portion of All Days</b>	33.3%	33.3%	33.3%
Data Source: Bloomberg.				
Note: Interval of time is defined around 11 a.m. NY time / 4 p.m. London time.				

FIGURE 19

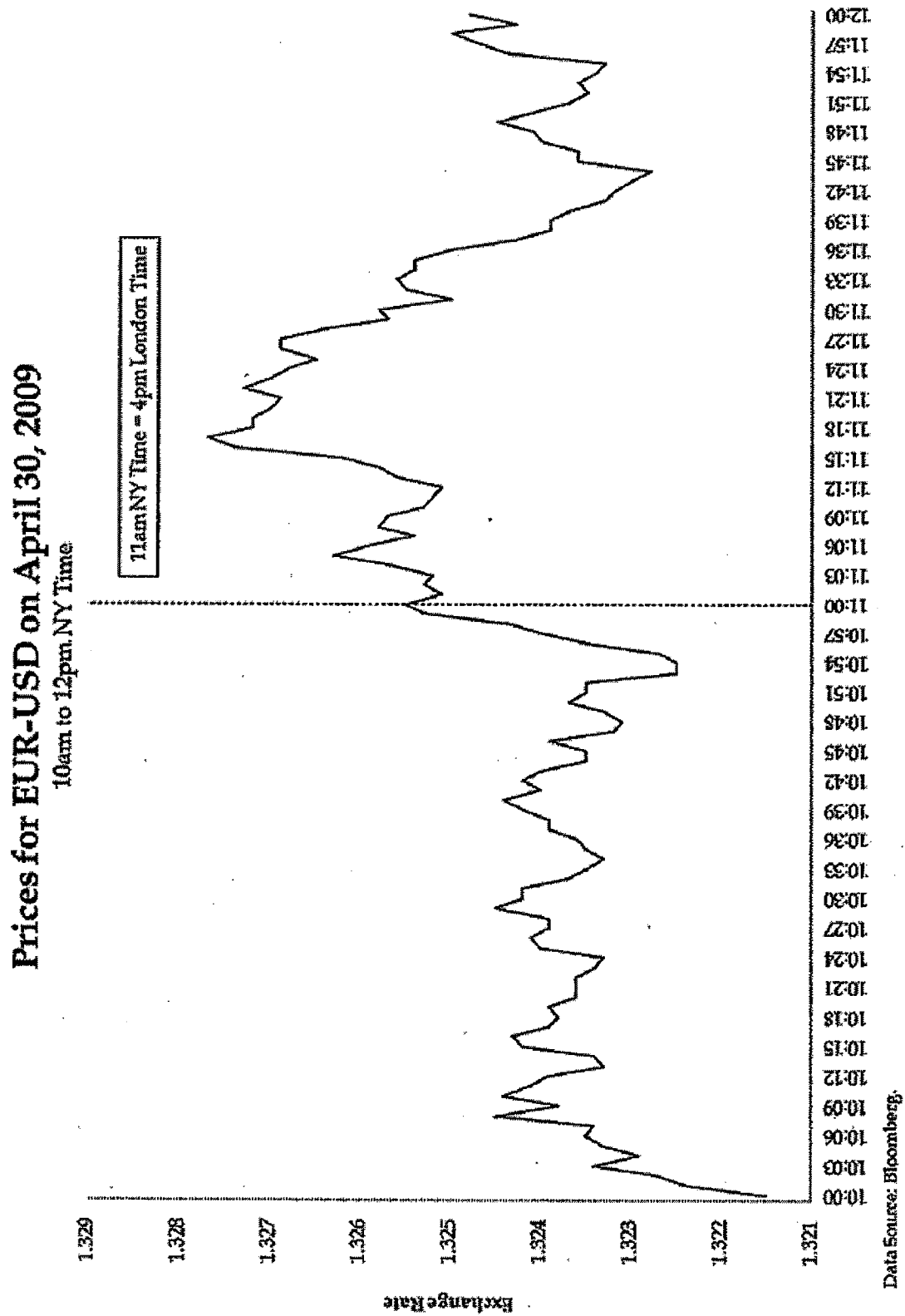




FIGURE 20

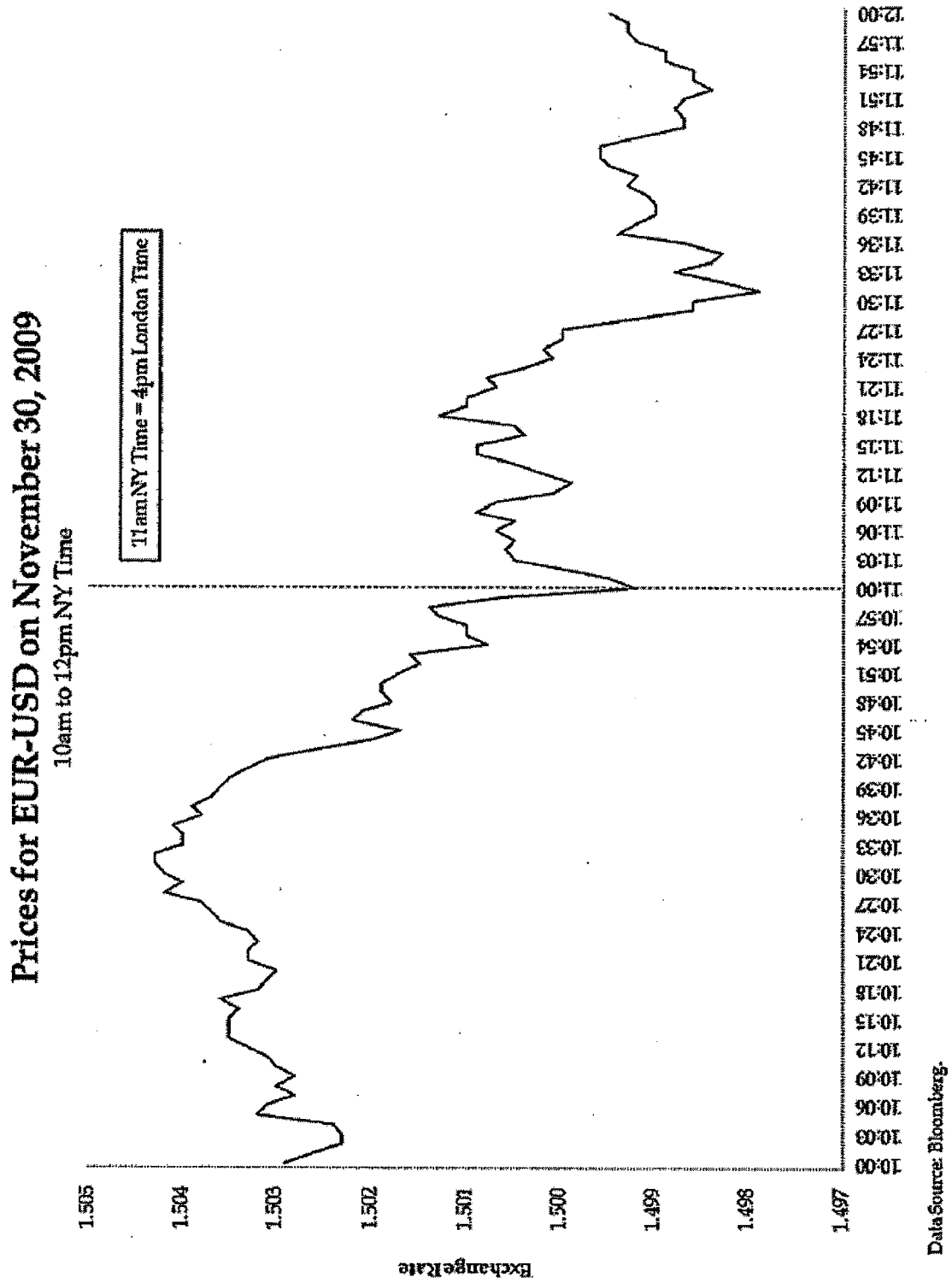


FIGURE 21

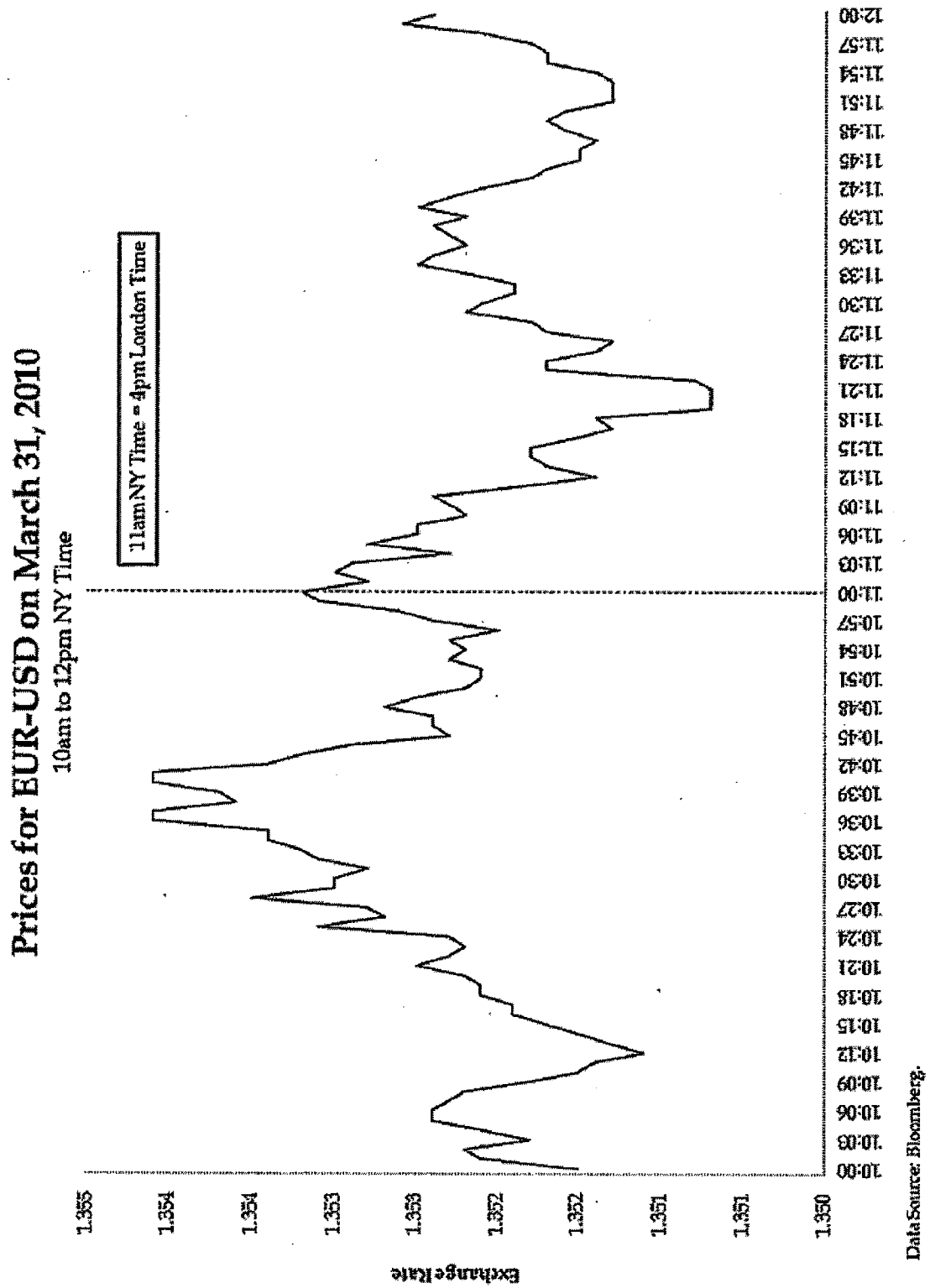


FIGURE 22

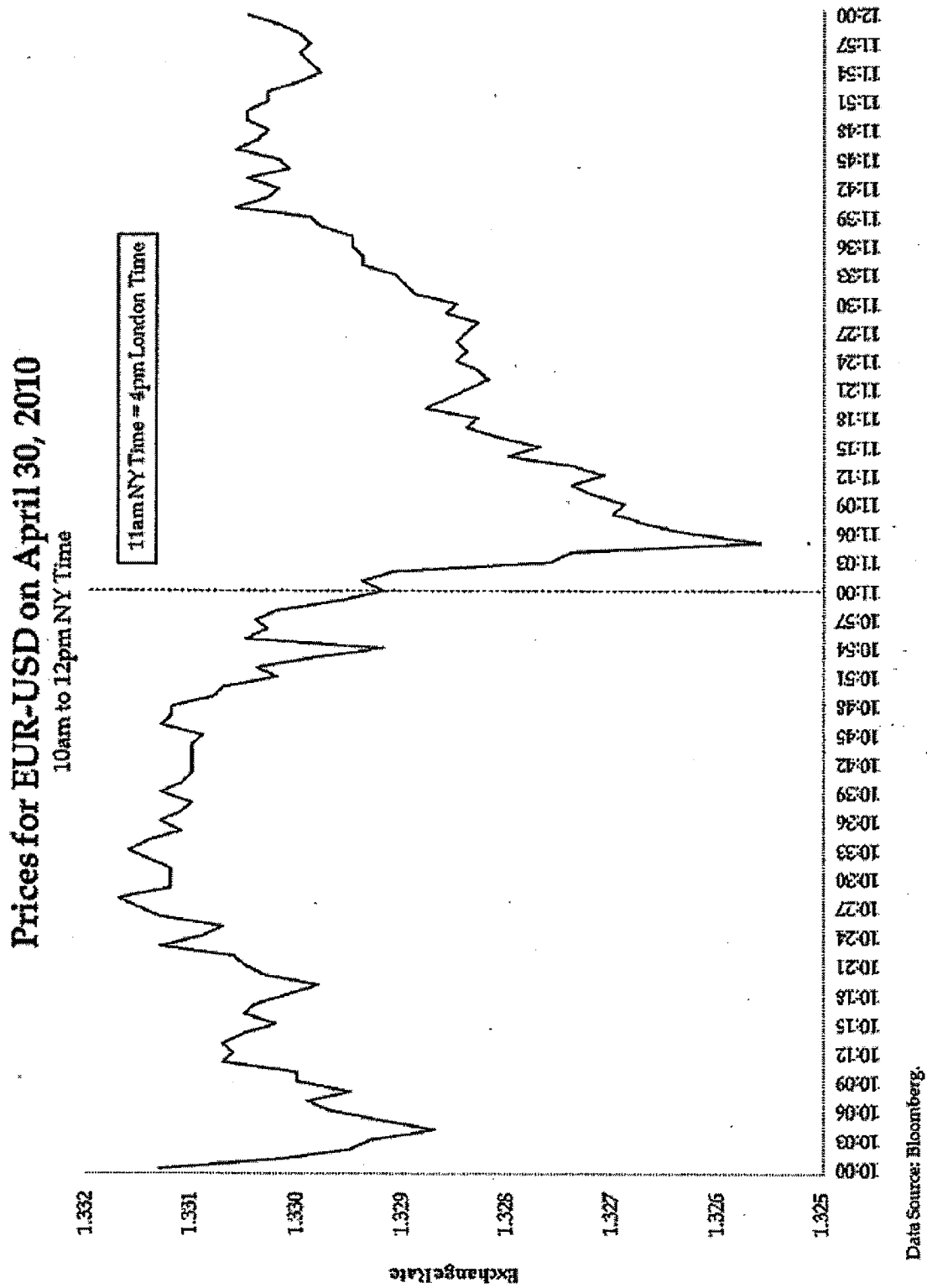


FIGURE 23

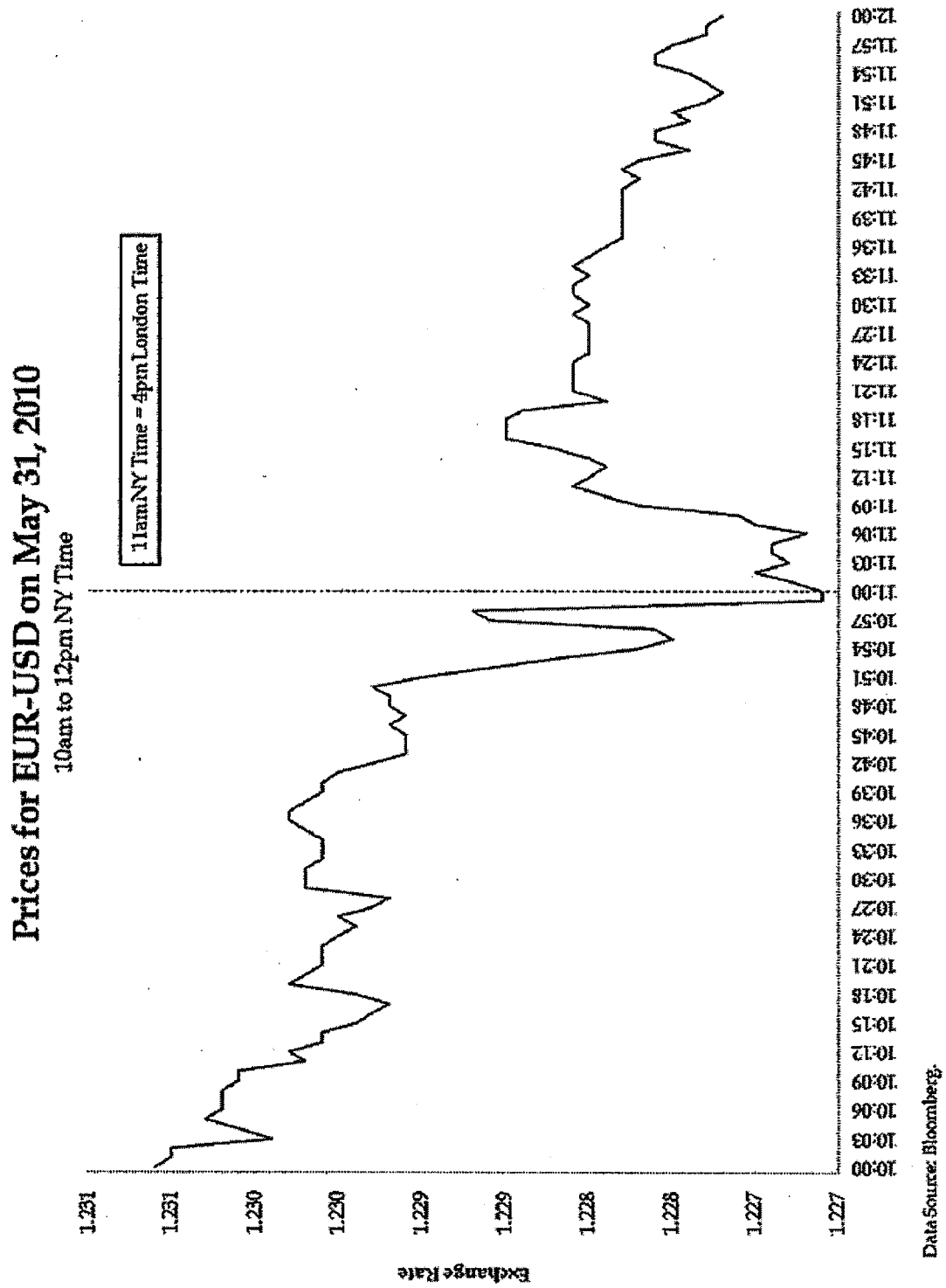


FIGURE 24

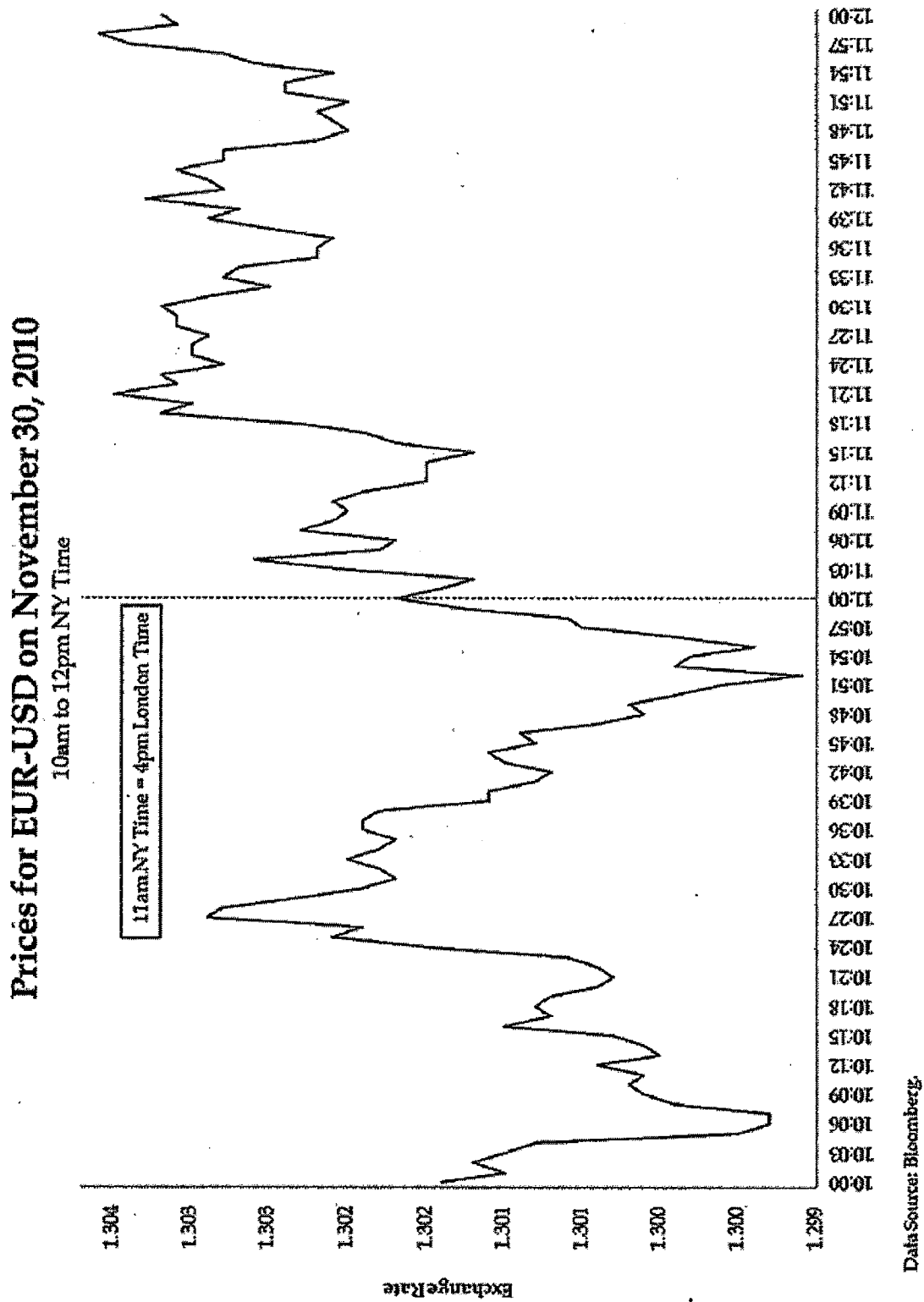


FIGURE 25

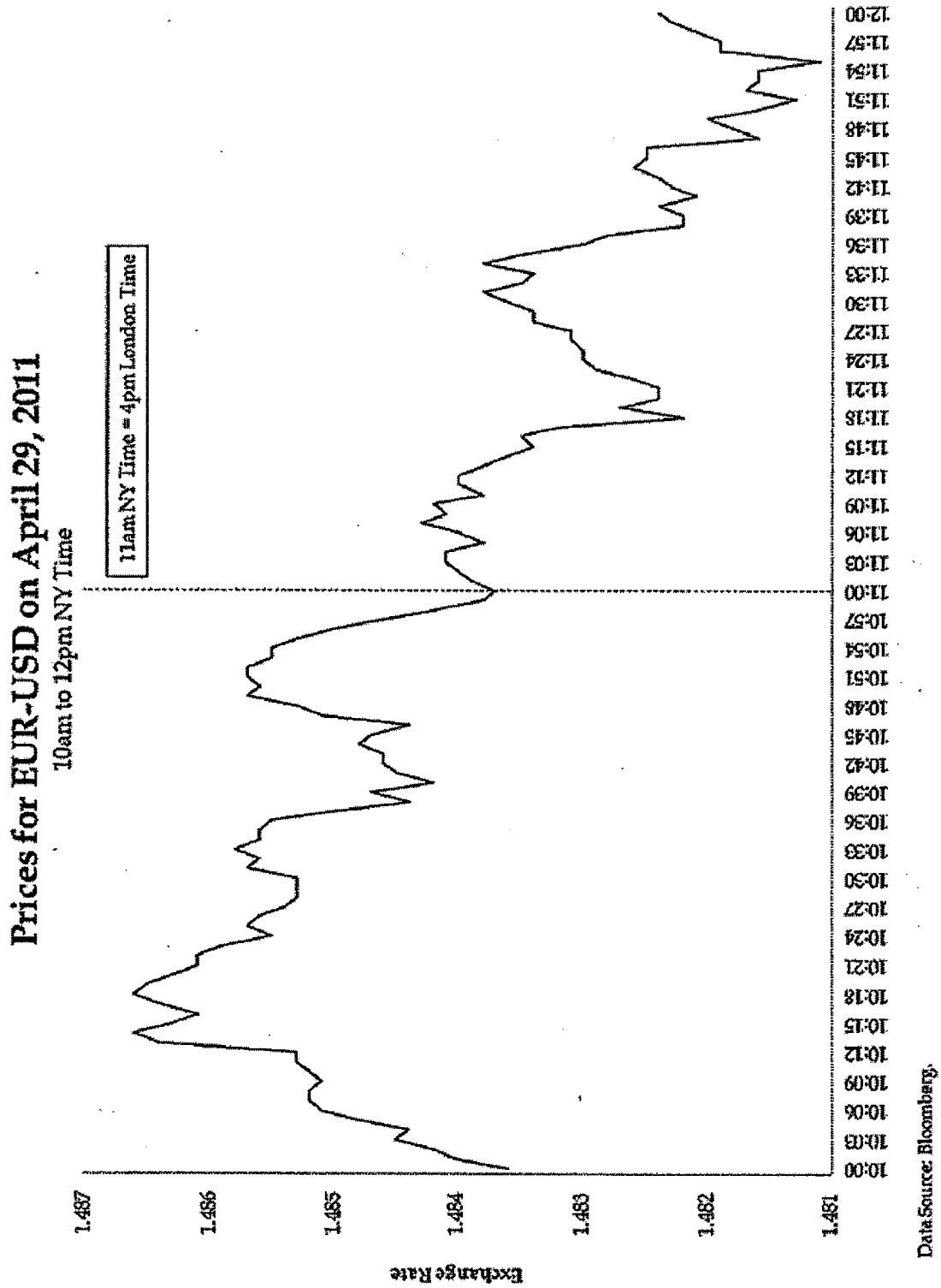


FIGURE 26

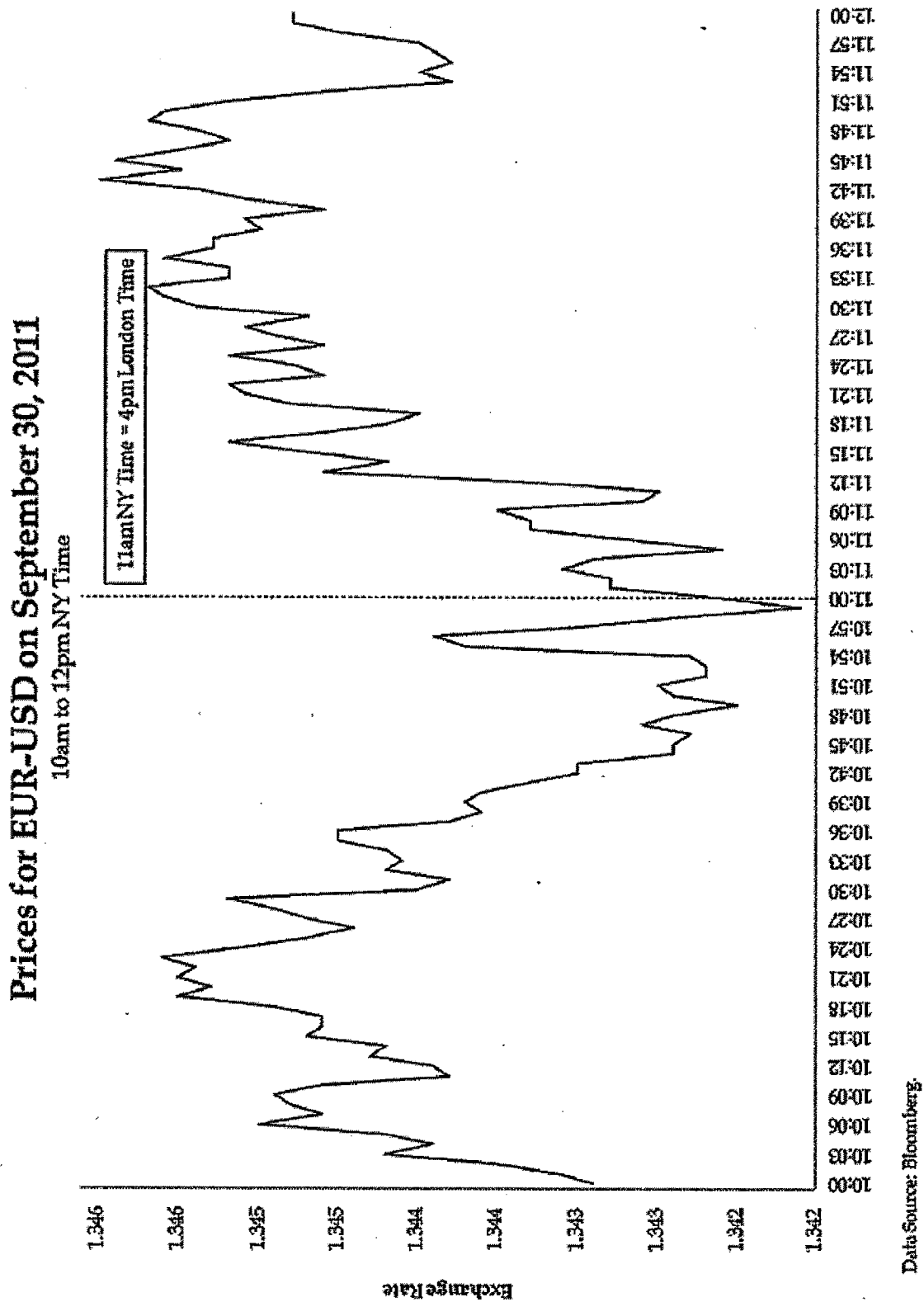


FIGURE 27

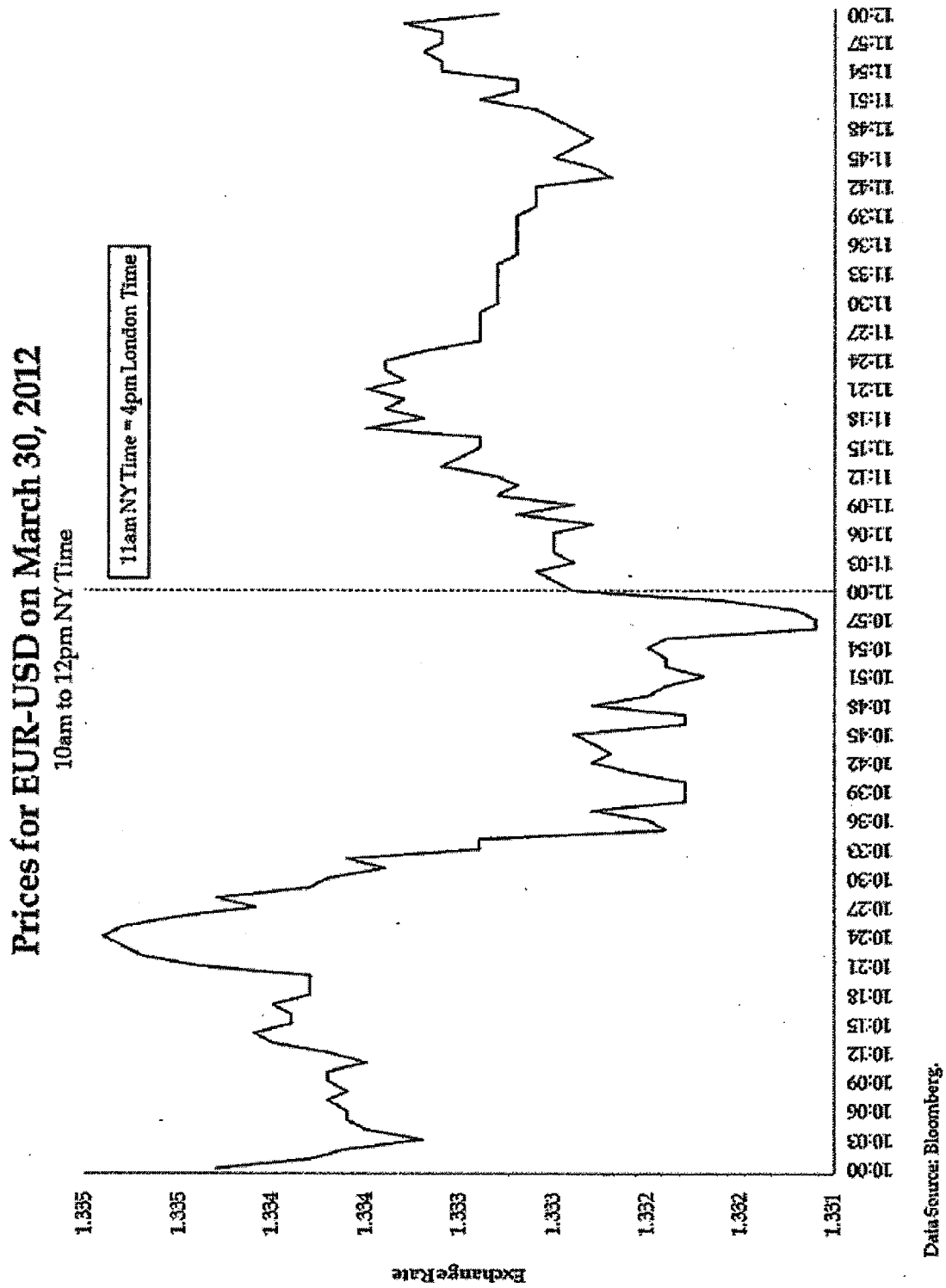




FIGURE 28

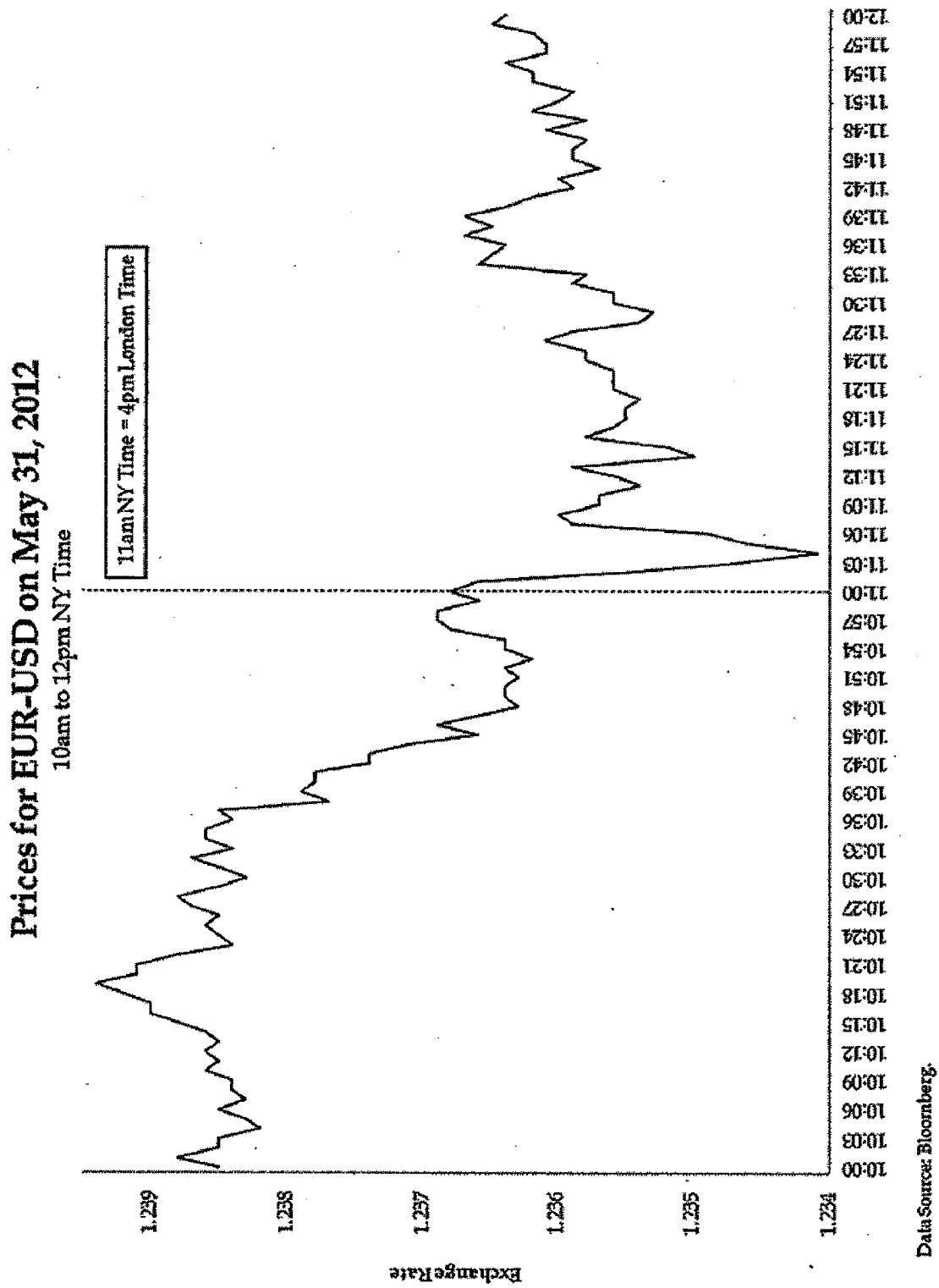


FIGURE 29

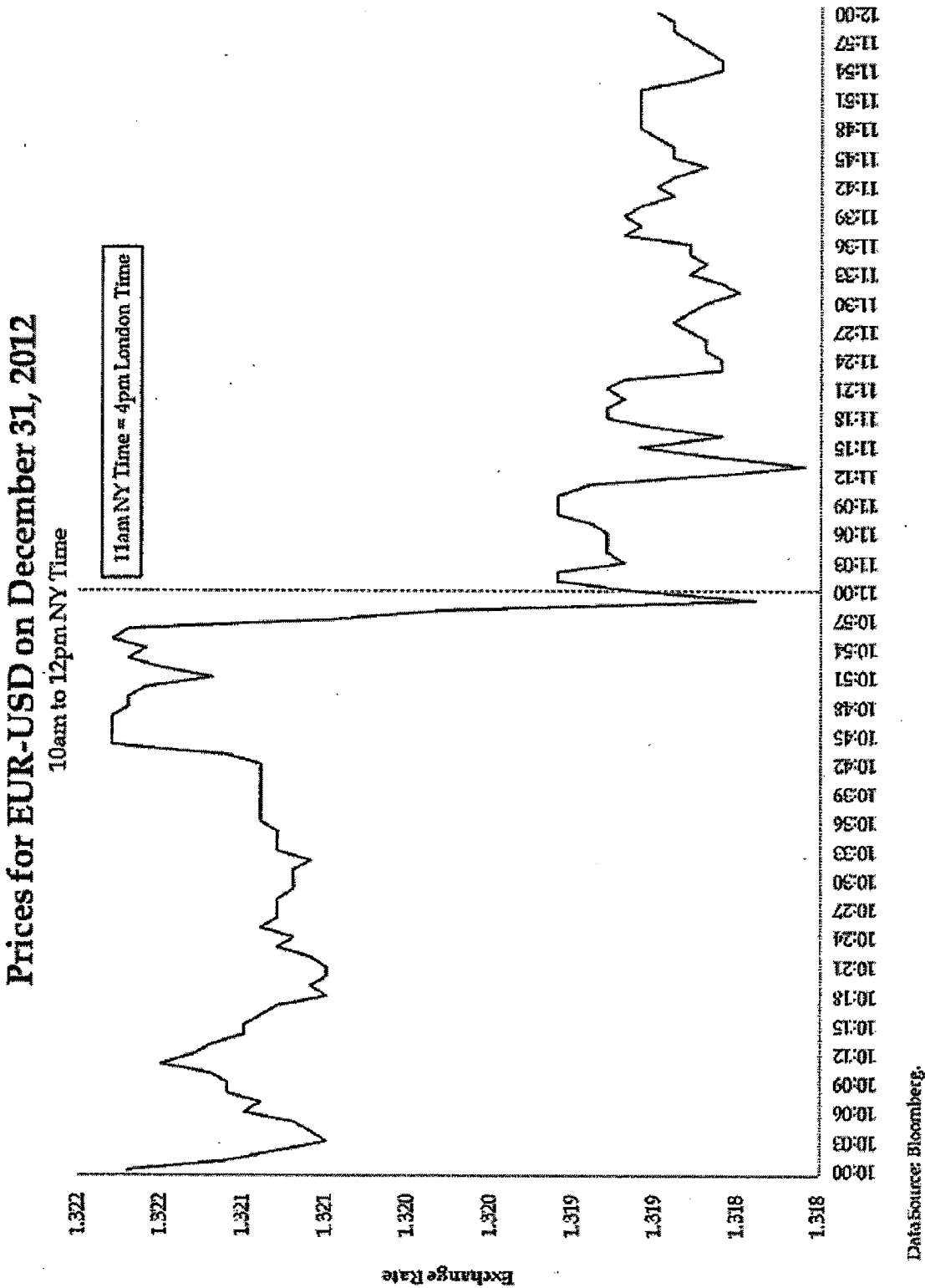


FIGURE 30

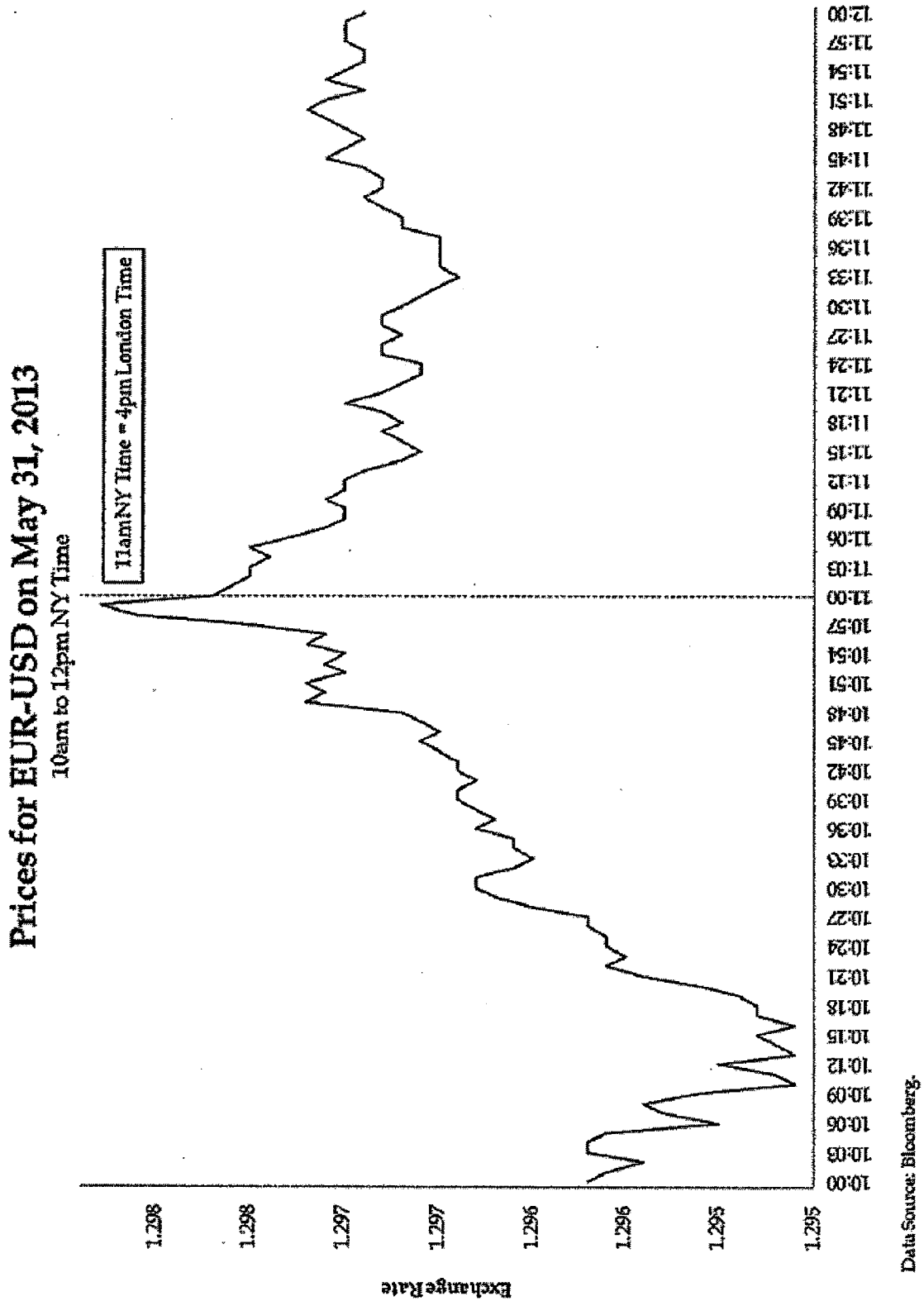


FIGURE 31

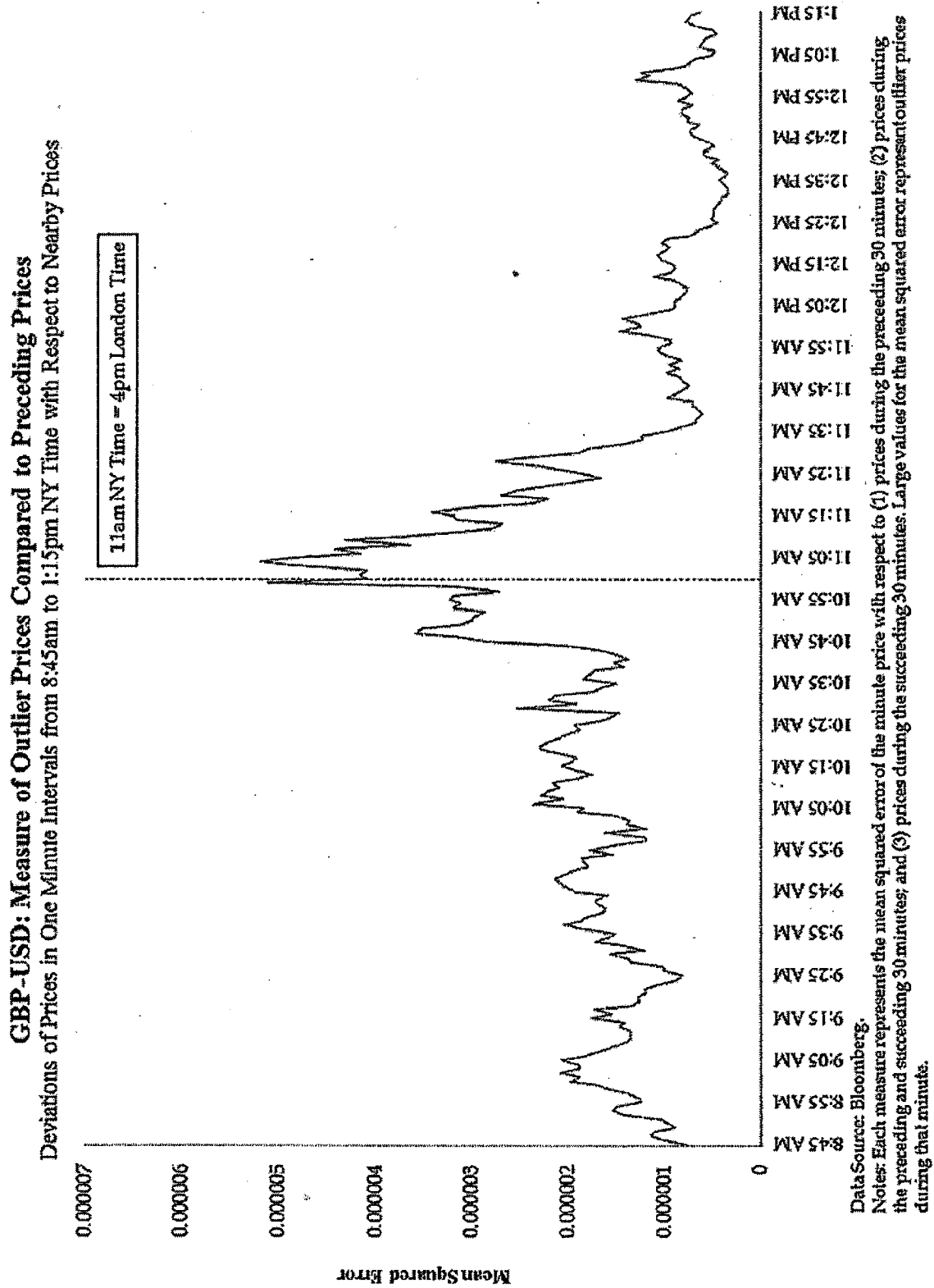


FIGURE 32

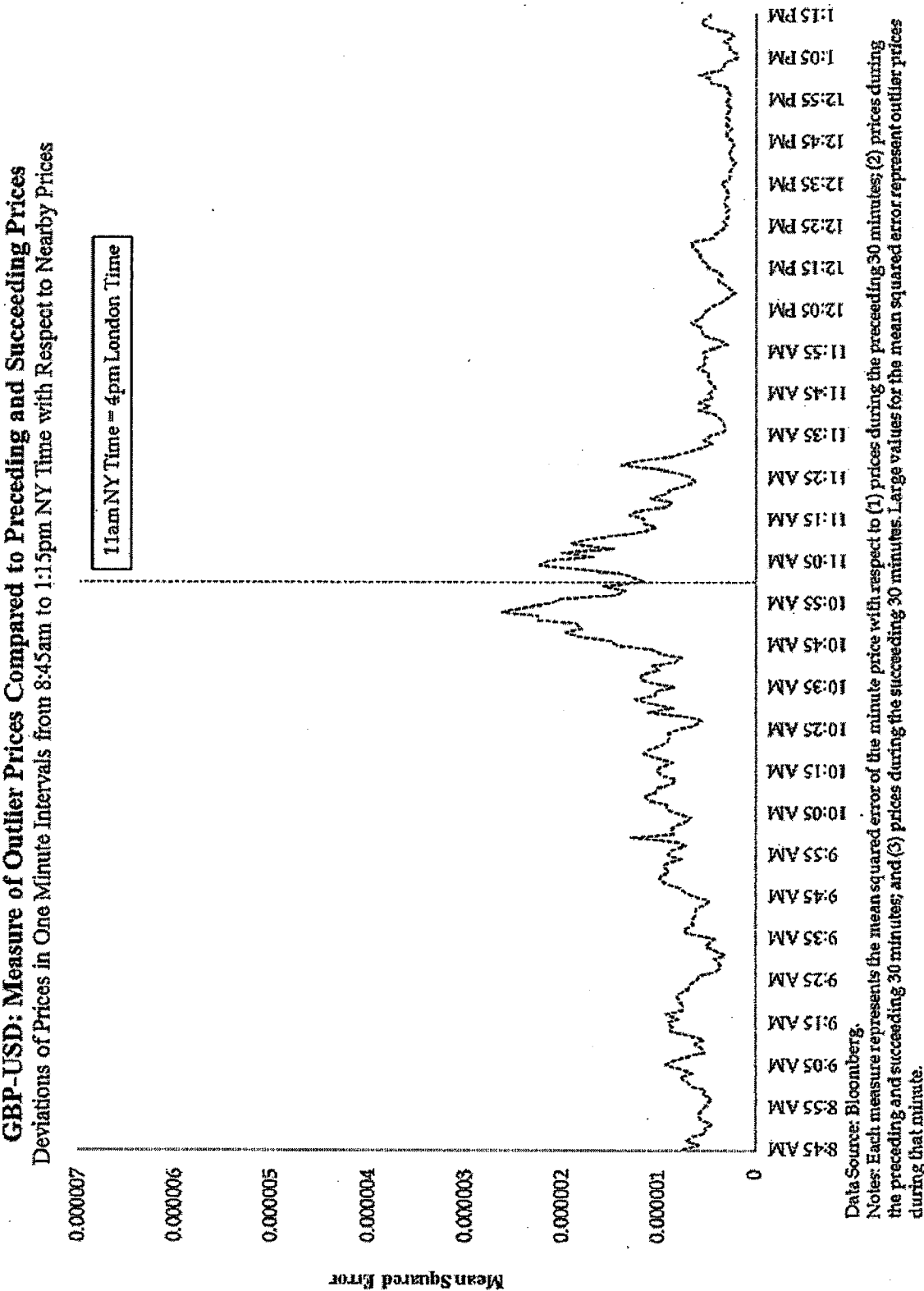


FIGURE 33

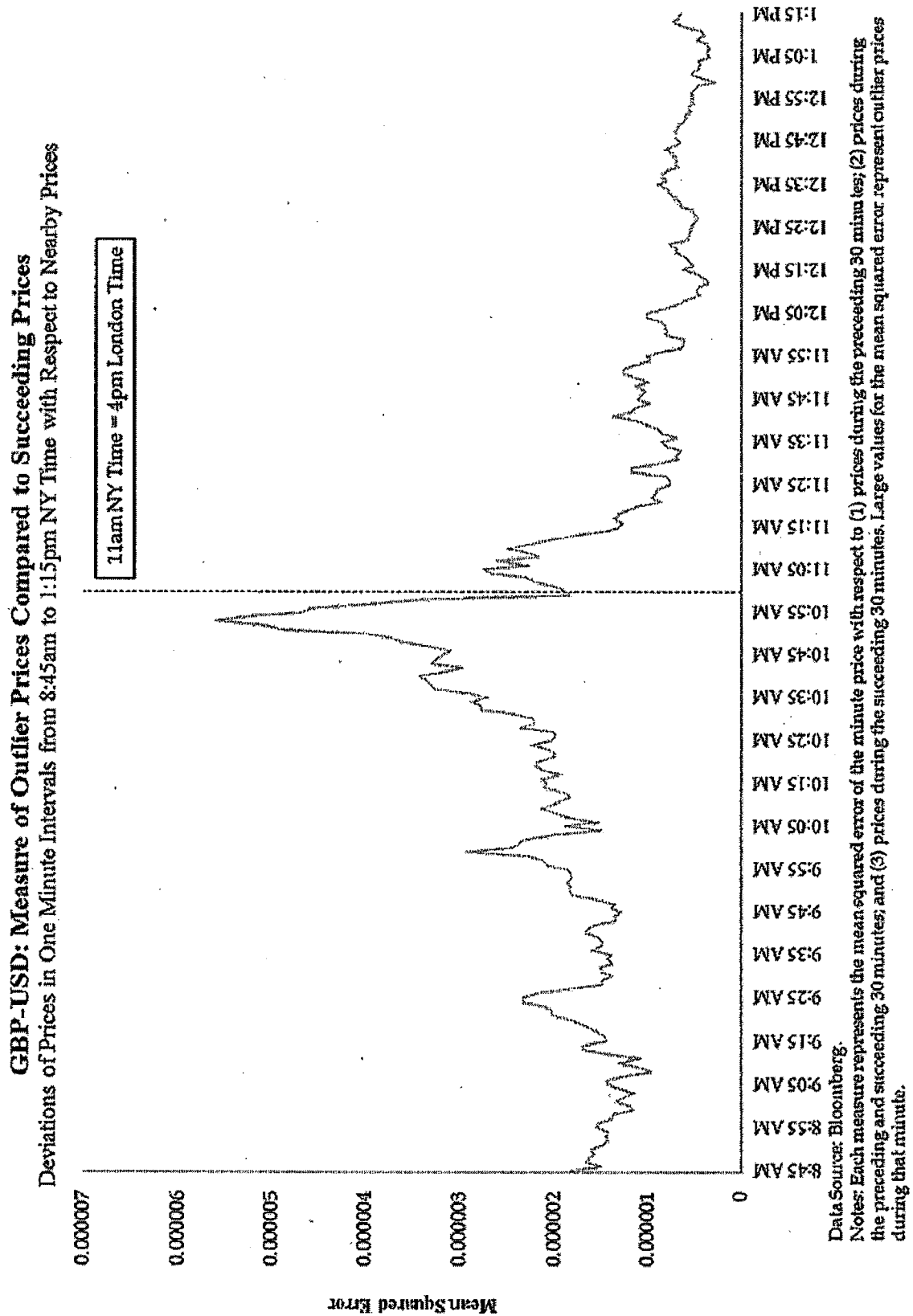


FIGURE 34

GBP-USD: Summary of Outliers				
Last Trading Day of Each Month (Jan 2009 - October 2013)				
		+/- 10 Minutes from 11am NY (4pm London)	+/- 20 Minutes from 11am NY (4pm London)	+/- 30 Minutes from 11am NY (4pm London)
<b>Full Period</b>	<b>Total Number of Days</b>	53	53	53
	<b>Non-Outlier Days</b>	21	16	14
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	16	13	8
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	11	12	15
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	5	12	16
	<b>Total Number of Outlier Days</b>	32	37	39
	<b>Number of Outlier Days as a Portion of All Days</b>	60.4%	69.8%	73.6%
<b>2009</b>	<b>Total Number of Days</b>	12	12	12
	<b>Non-Outlier Days</b>	6	4	3
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	3	4	1
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	2	1	3
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	1	3	5
	<b>Total Number of Outlier Days</b>	6	8	9
	<b>Number of Outlier Days as a Portion of All Days</b>	50.0%	66.7%	75.0%
<b>2010</b>	<b>Total Number of Days</b>	11	11	11
	<b>Non-Outlier Days</b>	2	2	1
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	4	2	2
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	3	3	4
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	2	4	4
	<b>Total Number of Outlier Days</b>	9	9	10
	<b>Number of Outlier Days as a Portion of All Days</b>	81.8%	81.8%	90.9%
<b>2011</b>	<b>Total Number of Days</b>	10	10	10
	<b>Non-Outlier Days</b>	2	1	1
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	6	5	4
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	2	3	3
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	0	1	2
	<b>Total Number of Outlier Days</b>	8	9	9
	<b>Number of Outlier Days as a Portion of All Days</b>	80.0%	90.0%	90.0%
<b>2012</b>	<b>Total Number of Days</b>	11	11	11
	<b>Non-Outlier Days</b>	3	2	2
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	2	1	0
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	4	4	5
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	2	4	4
	<b>Total Number of Outlier Days</b>	8	9	9
	<b>Number of Outlier Days as a Portion of All Days</b>	72.7%	81.8%	81.8%
<b>2013</b>	<b>Total Number of Days</b>	9	9	9
	<b>Non-Outlier Days</b>	8	7	7
	<b>Number of Outlier Days Comparing Price to Preceding Prices</b>	1	1	1
	<b>Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices</b>	0	1	0
	<b>Number of Outlier Days Comparing Price to Succeeding</b>	0	0	1
	<b>Total Number of Outlier Days</b>	1	2	2
	<b>Number of Outlier Days as a Portion of All Days</b>	11.1%	22.2%	22.2%
Data Source: Bloomberg.				
Note: Interval of time is defined around 11 a.m. NY time / 4 p.m. London time.				

FIGURE 35

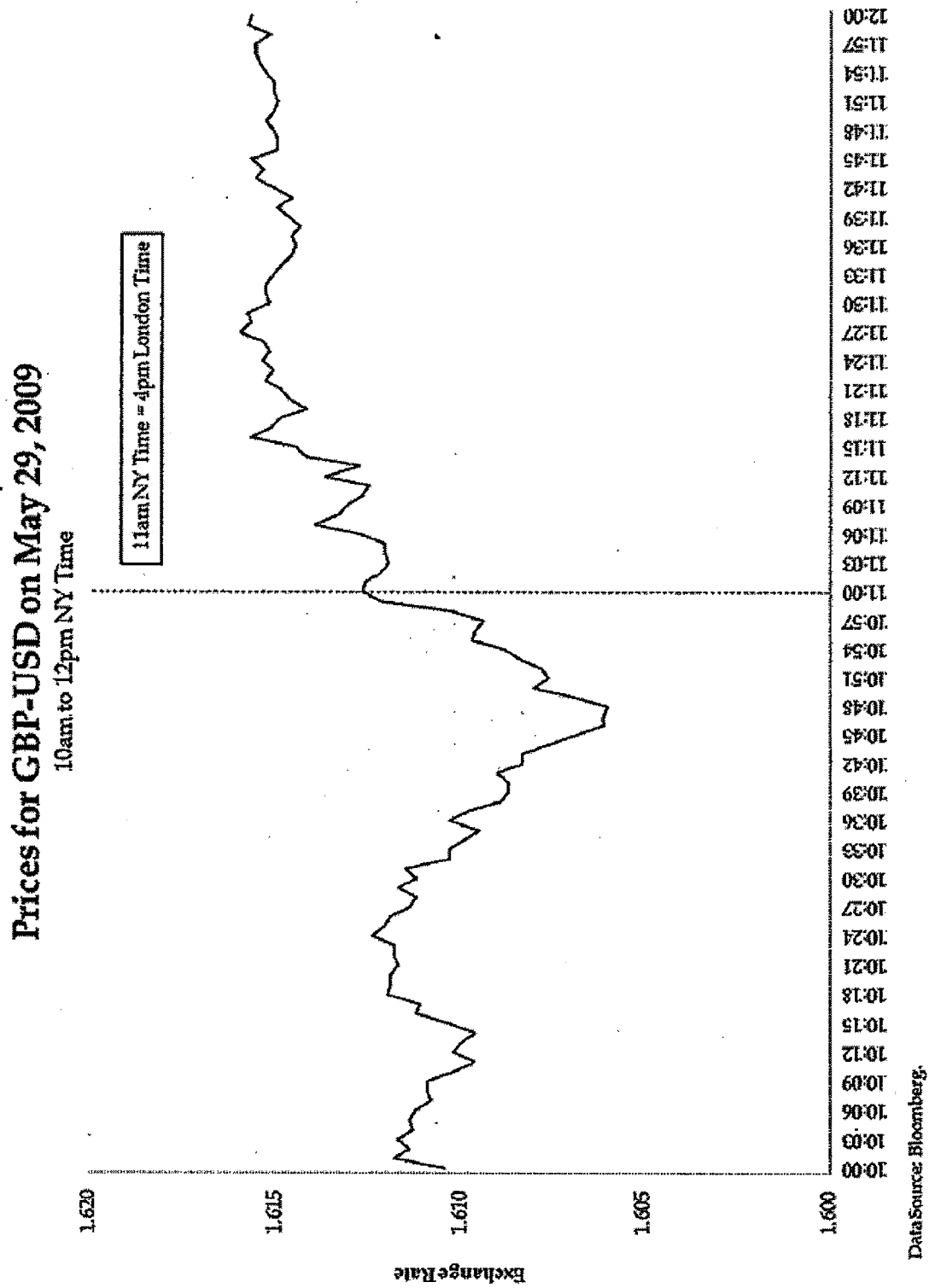
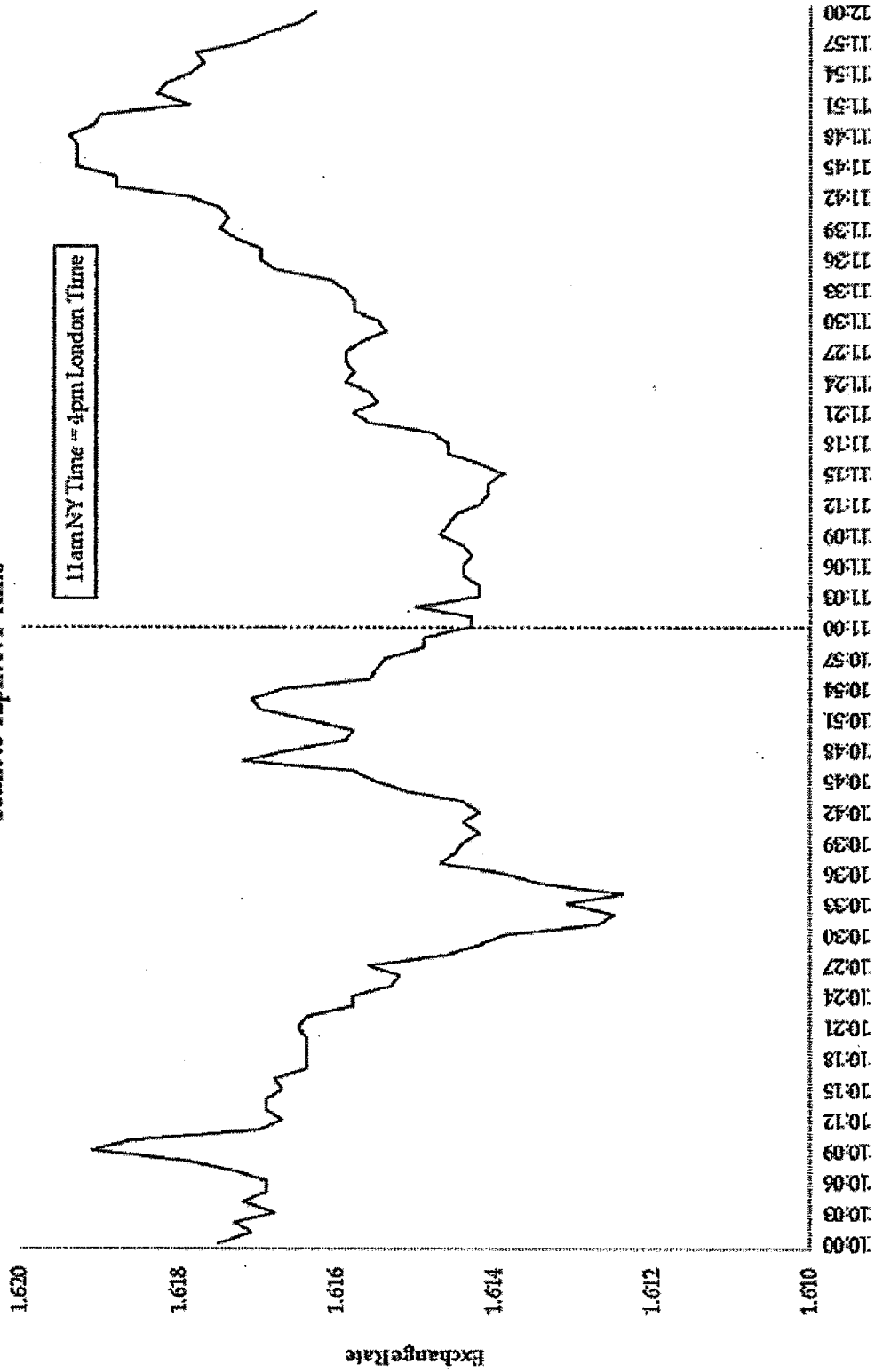




FIGURE 36

Prices for GBP-USD on December 31, 2009

10am to 12pm NY Time



Data Source: Bloomberg.

FIGURE 37

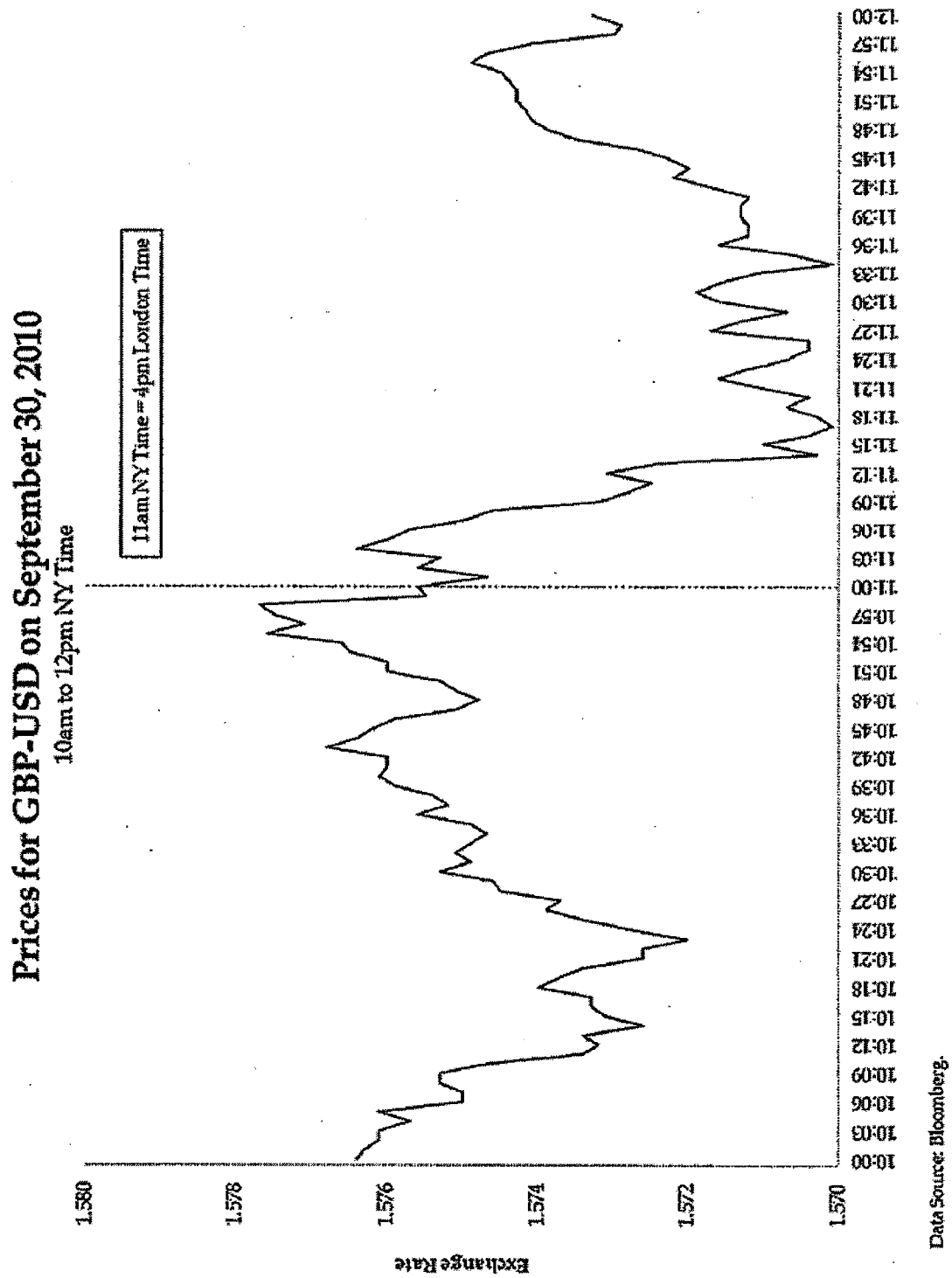


FIGURE 38

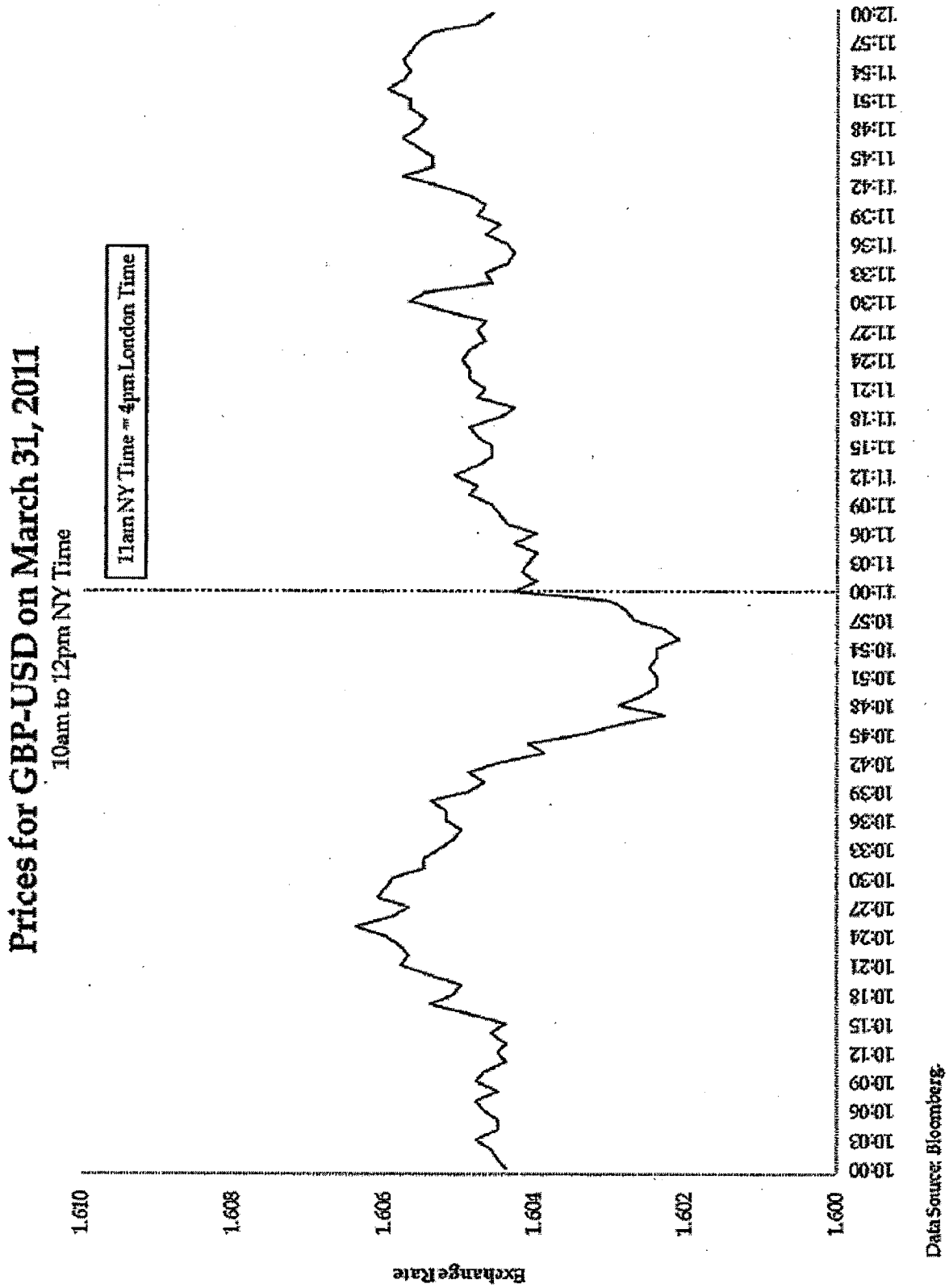


FIGURE 39

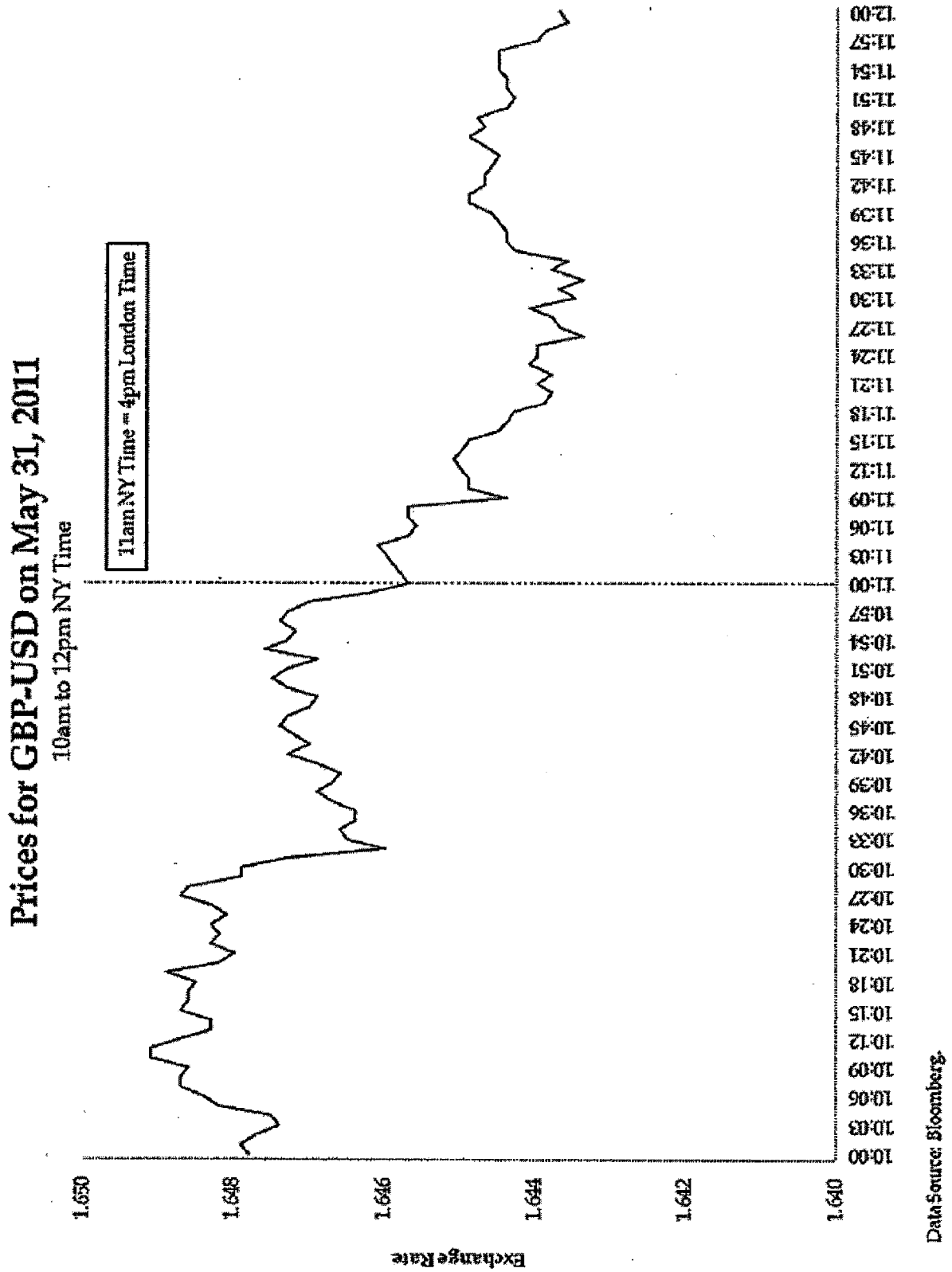


FIGURE 40

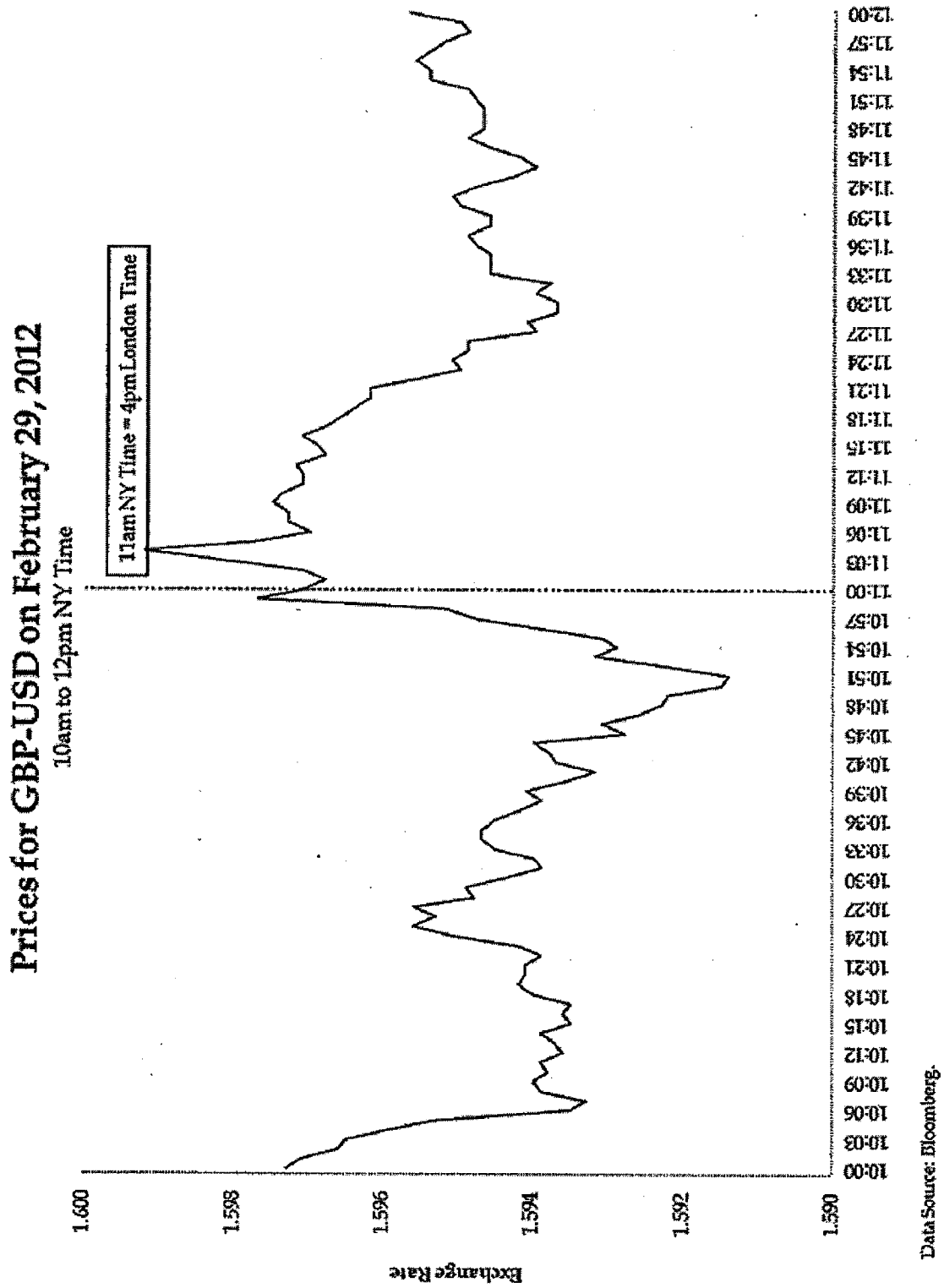


FIGURE 41

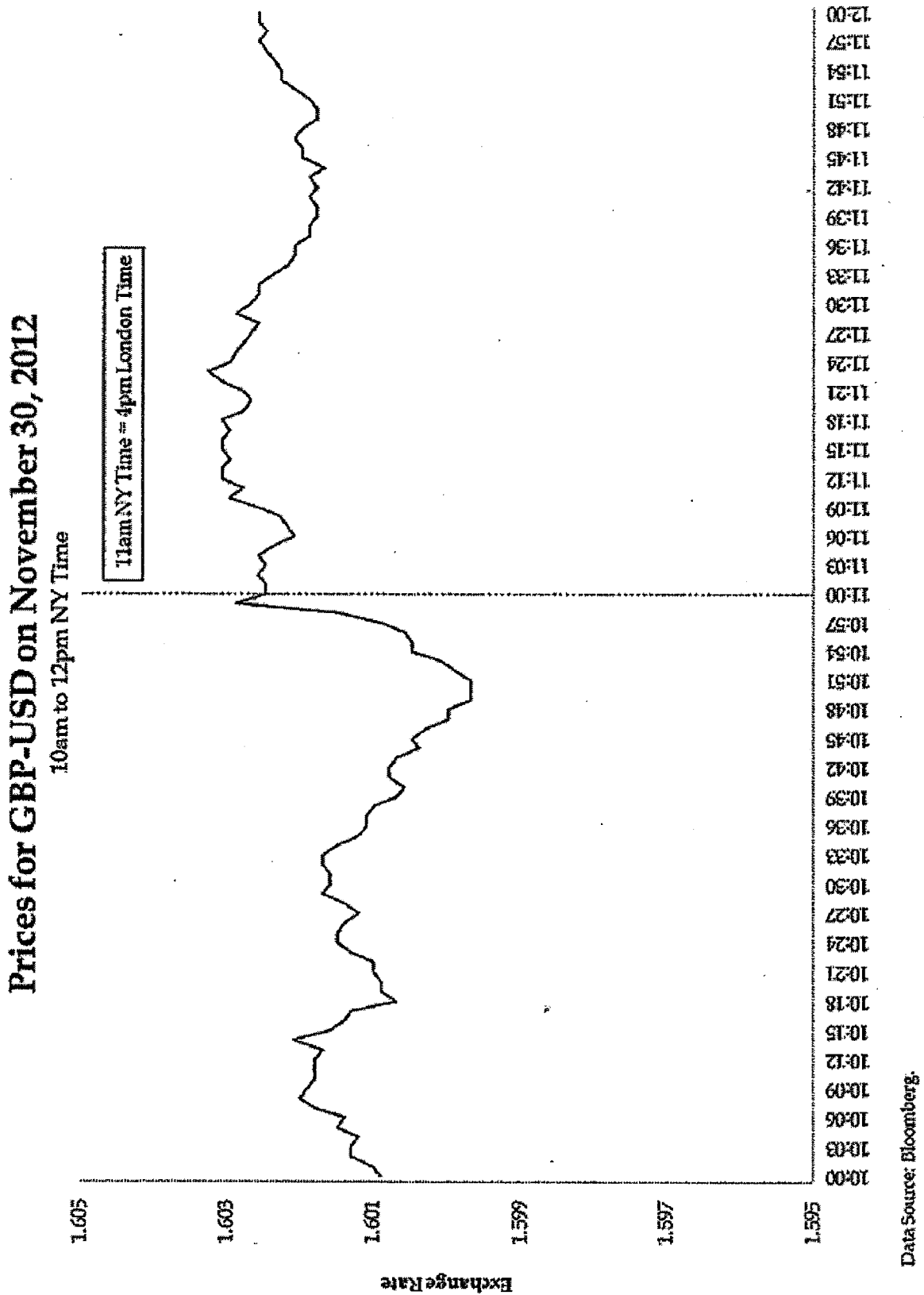


FIGURE 42

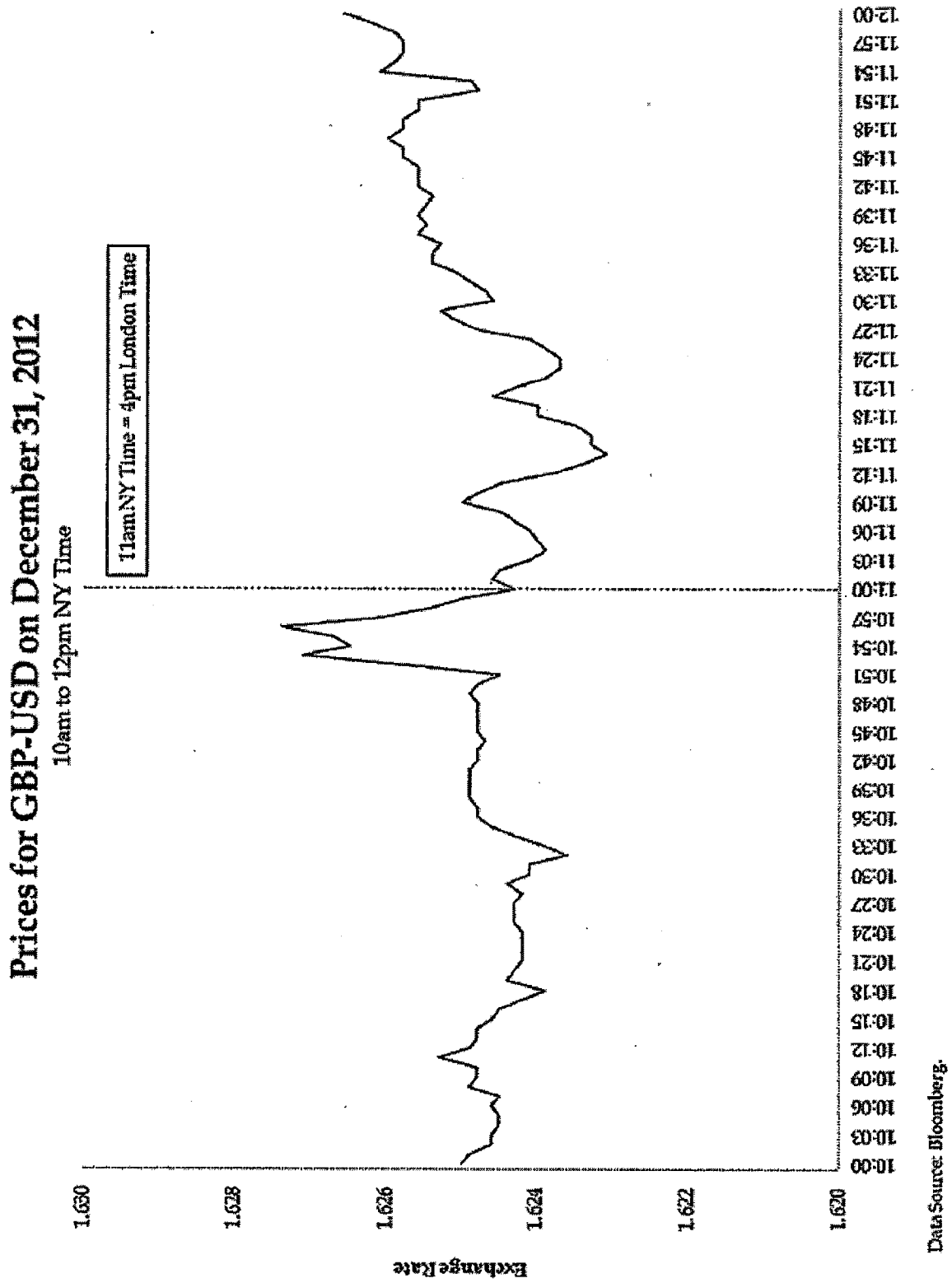


FIGURE 43

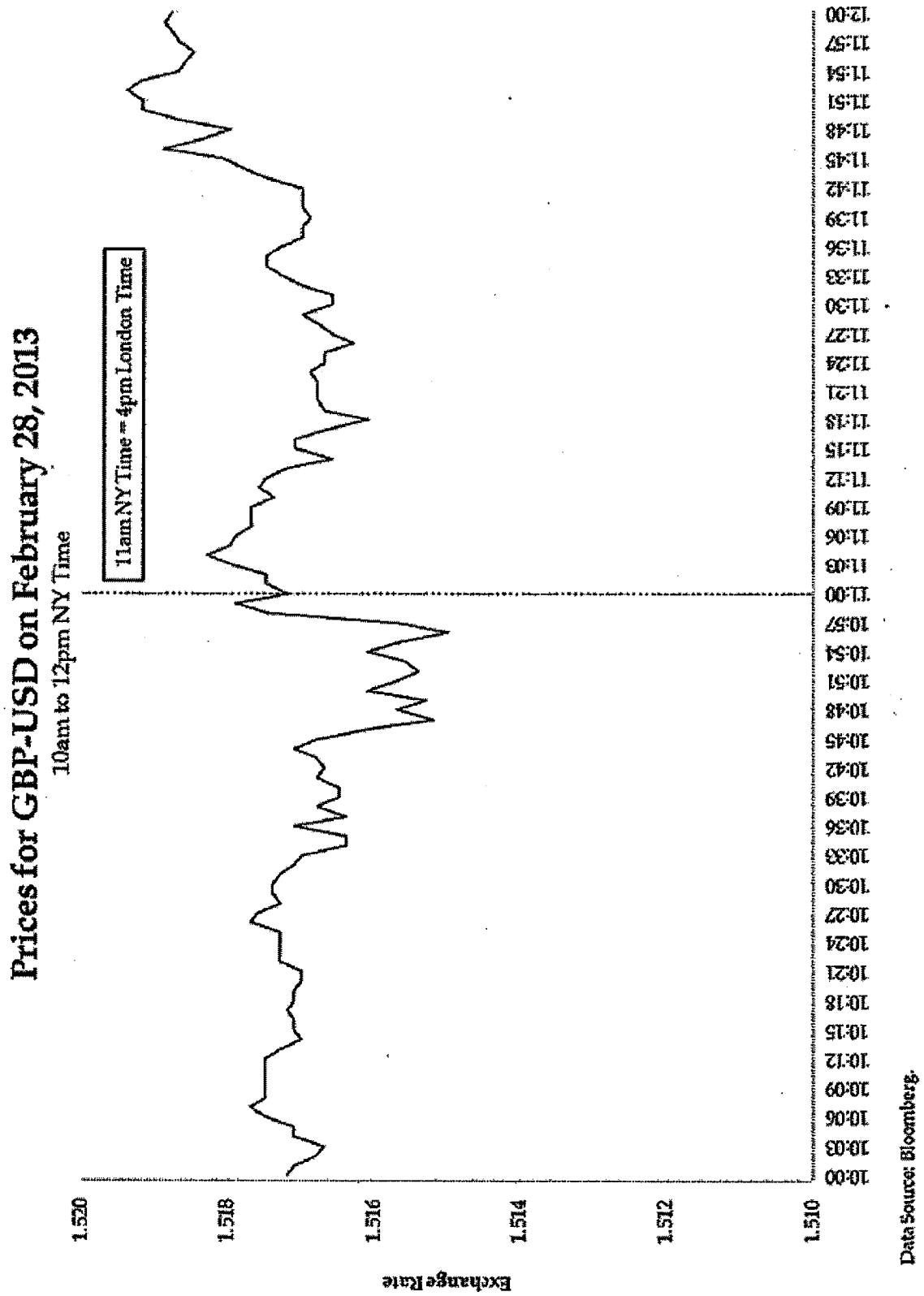




FIGURE 44

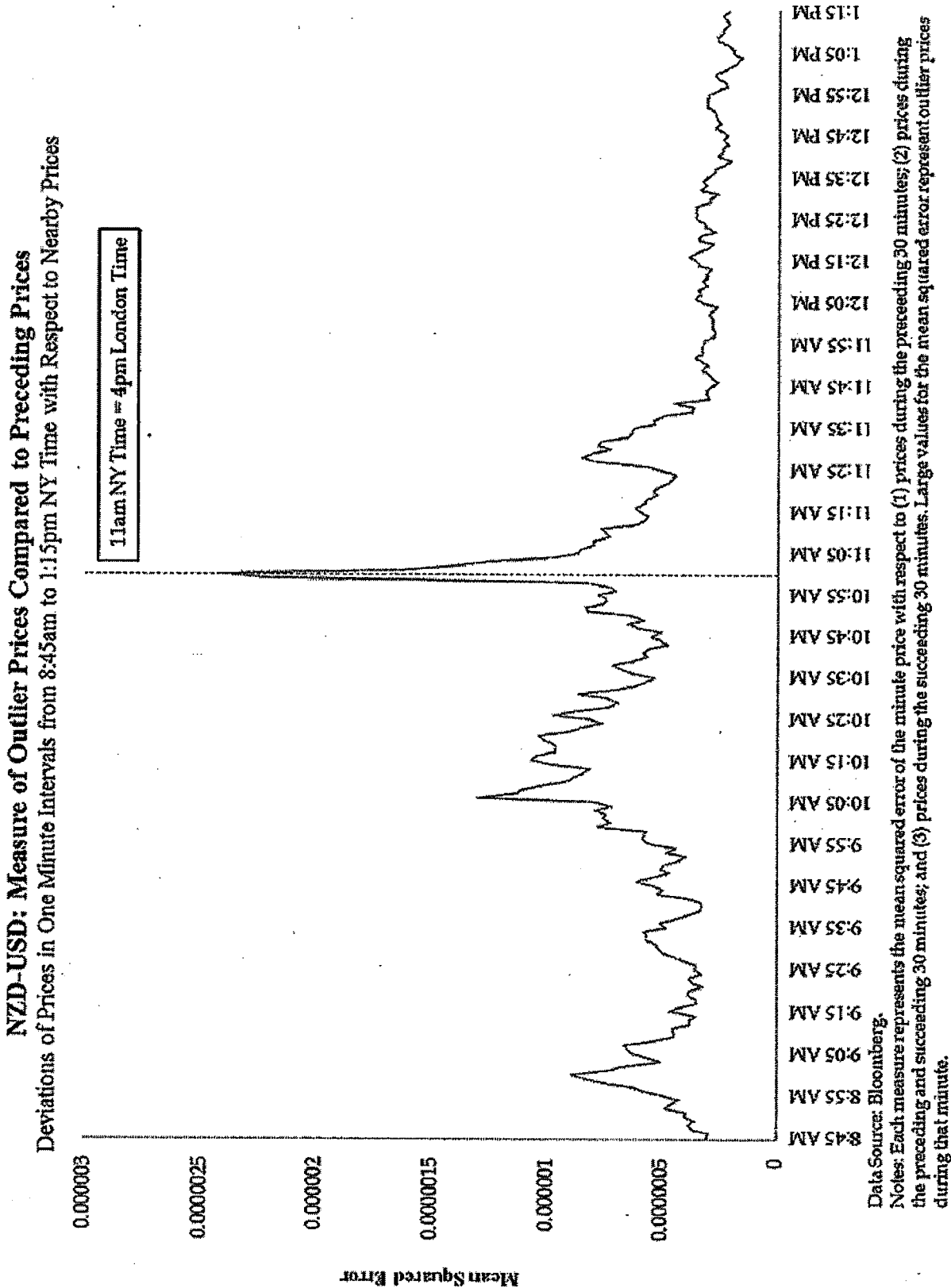


FIGURE 45

**NZD-USD: Measure of Outlier Prices Compared to Preceding and Succeeding Prices**  
Deviations of Prices in One Minute Intervals from 8:45am to 1:15pm NY Time with Respect to Nearby Prices

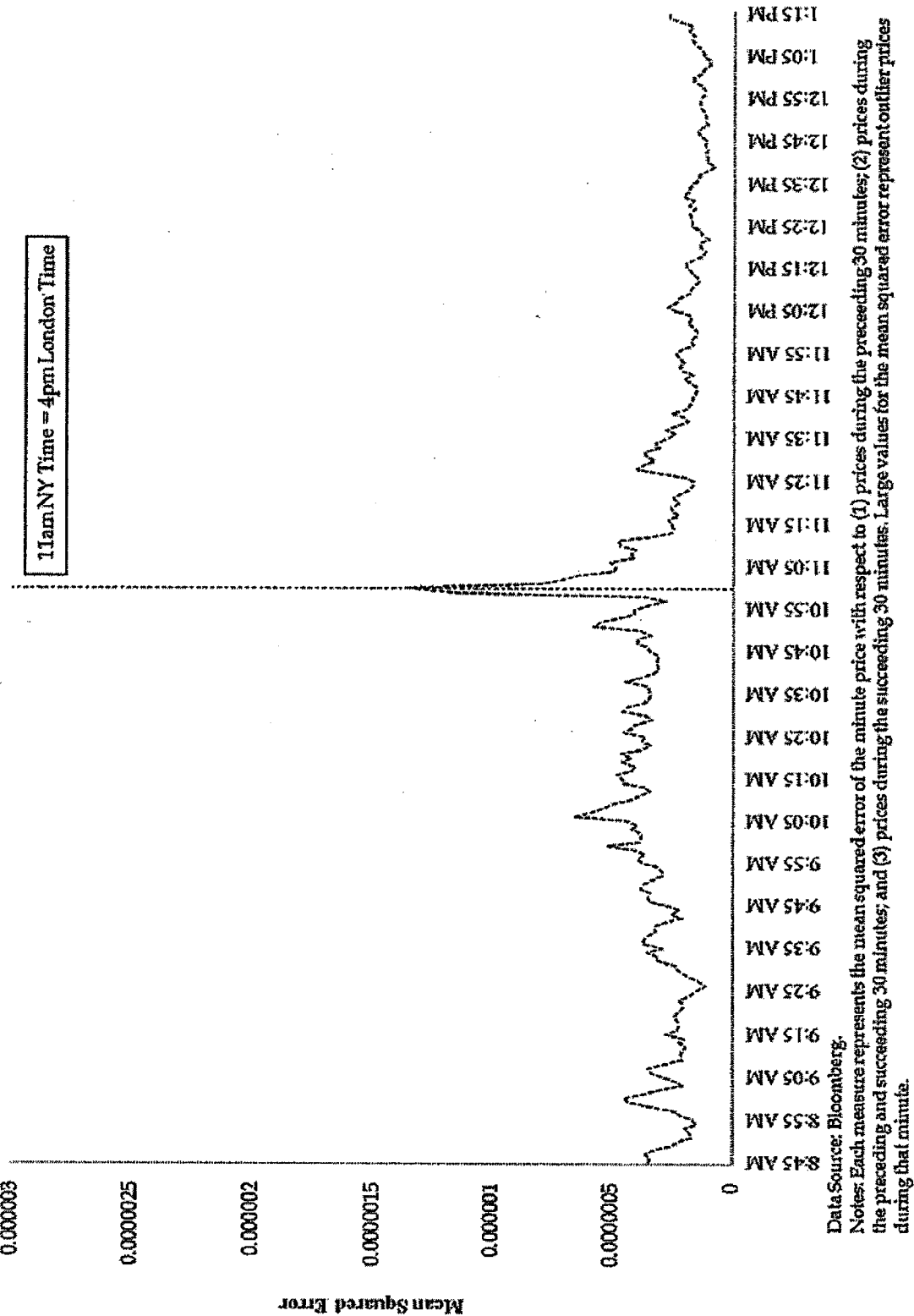


FIGURE 46

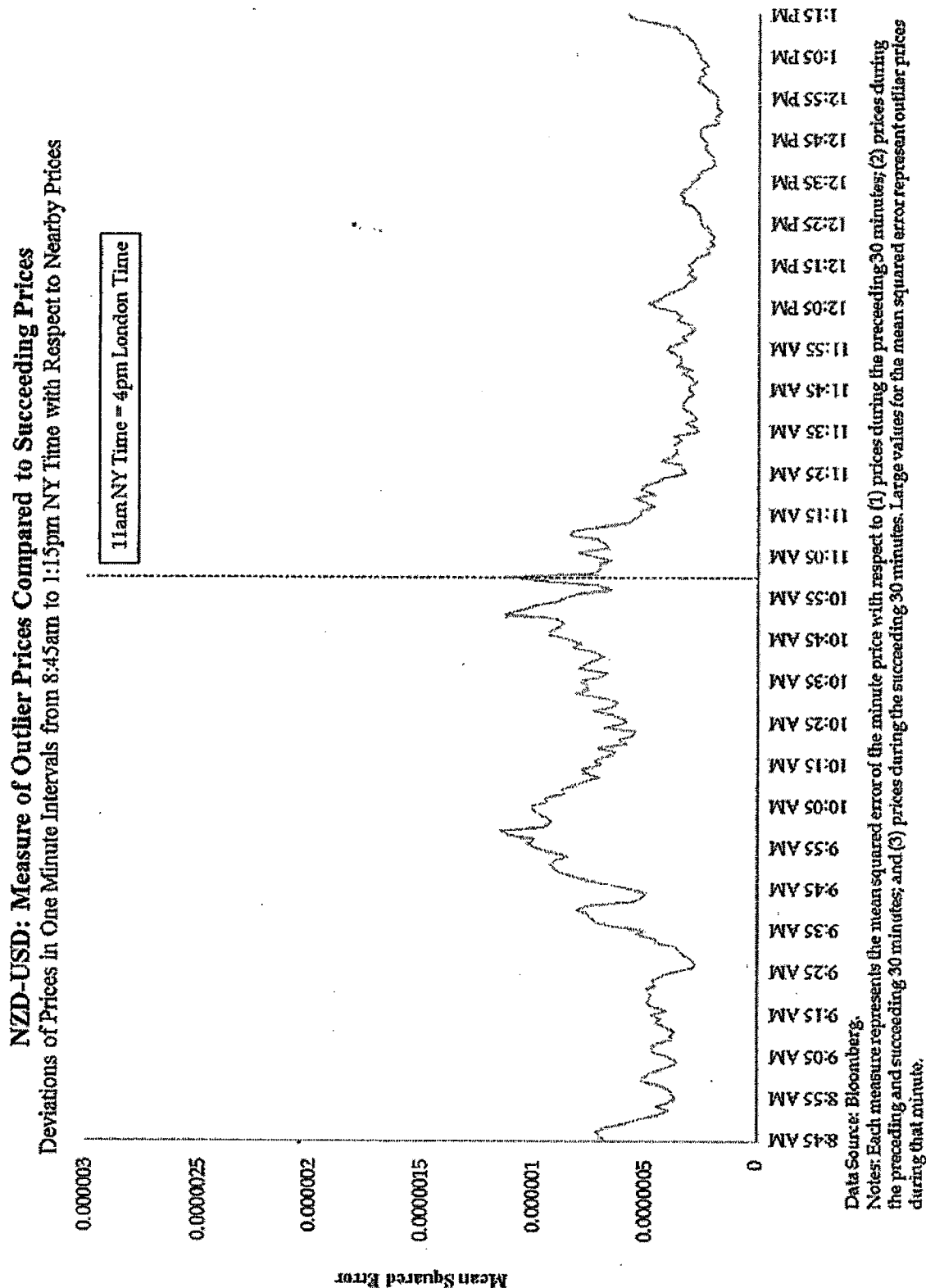


FIGURE 47

NZD-USD: Summary of Outliers				
Last Trading Day of Each Month (Jan 2009 - October 2013)				
		+/- 10 Minutes from 11am NY (4pm London)	+/- 20 Minutes from 11am NY (4pm London)	+/- 30 Minutes from 11am NY (4pm London)
<b>Full Period</b>	<b>Total Number of Days</b>	54	54	54
	Non-Outlier Days	33	30	24
	Number of Outlier Days Comparing Price to Preceding Prices	7	7	8
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	9	9	11
	Number of Outlier Days Comparing Price to Succeeding	5	8	11
	Total Number of Outlier Days	21	24	30
	Number of Outlier Days as a Portion of All Days	38.9%	44.4%	55.6%
<b>2009</b>	<b>Total Number of Days</b>	12	12	12
	Non-Outlier Days	7	7	5
	Number of Outlier Days Comparing Price to Preceding Prices	1	1	1
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	3	3	3
	Number of Outlier Days Comparing Price to Succeeding	1	1	3
	Total Number of Outlier Days	5	5	7
	Number of Outlier Days as a Portion of All Days	41.7%	41.7%	58.3%
<b>2010</b>	<b>Total Number of Days</b>	11	11	11
	Non-Outlier Days	5	5	3
	Number of Outlier Days Comparing Price to Preceding Prices	2	1	2
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	2	3	3
	Number of Outlier Days Comparing Price to Succeeding	2	2	3
	Total Number of Outlier Days	6	6	8
	Number of Outlier Days as a Portion of All Days	54.5%	54.5%	72.7%
<b>2011</b>	<b>Total Number of Days</b>	11	11	11
	Non-Outlier Days	7	6	6
	Number of Outlier Days Comparing Price to Preceding Prices	2	1	1
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	1	1	1
	Number of Outlier Days Comparing Price to Succeeding	1	3	3
	Total Number of Outlier Days	4	5	5
	Number of Outlier Days as a Portion of All Days	36.4%	45.5%	45.5%
<b>2012</b>	<b>Total Number of Days</b>	11	11	11
	Non-Outlier Days	5	4	4
	Number of Outlier Days Comparing Price to Preceding Prices	2	3	2
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	3	2	3
	Number of Outlier Days Comparing Price to Succeeding	1	2	2
	Total Number of Outlier Days	6	7	7
	Number of Outlier Days as a Portion of All Days	54.5%	63.6%	63.6%
<b>2013</b>	<b>Total Number of Days</b>	9	9	9
	Non-Outlier Days	9	8	6
	Number of Outlier Days Comparing Price to Preceding Prices	0	1	2
	Number of Outlier Days Comparing Price to Preceding Prices and Succeeding Prices	0	0	1
	Number of Outlier Days Comparing Price to Succeeding	0	0	0
	Total Number of Outlier Days	0	1	3
	Number of Outlier Days as a Portion of All Days	0.0%	11.1%	33.3%
Data Source: Bloomberg.				
Note: Interval of time is defined around 11 a.m. NY time / 4 p.m. London time				